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FRIDAY, NOVEMBER 21, 1958

[No. 21

CONTENTS

	PAGE
Editorial Notes	613
An Opportunity Missed	615
Concrete Bridging in the L.M. Region	615
British Transport Traffic Receipts	616
Brigadier Langley's Annual Report	617
The Scrap Heap	620
Overseas Railway Affairs	621
Test Site for Wagon Buffing and Drawgear	622
Electronic Computer for British Railways Research Centre	624
Long-Welded Rails Laid in 600-ft. Lengths	625
Electric Traction Section	627
Track Re-laying with Single Line Occupation Personal	632
Personal	633
New Equipment and Processes	636
News Articles	637
Contracts and Tenders	641
Notes and News	641
Railway Stock Market and Official Notices	644

Government Support for the Railways

THE Government has undertaken to re-examine the railway modernisation programme for 1959 to see whether, in the words of the Minister of Transport & Civil Aviation, Mr. Harold Watkinson, "There is any more money that can usefully be used, if the finance is made available." The Minister made clear in the House of Commons last week that as regards funds for modernisation during the current year, the British Transport Commission has had everything it has asked for. Account must be taken of the limitations on capital expenditure imposed a year ago, and the Government view is that these limitations were relieved when an additional £25 million was made available in May to accelerate modernisation in 1958 and 1959. As to next year, the Minister declared that although the Commission had been allocated all the finance it had sought, he was anxious that modernisation should be pressed forward as fast as possible. Hence the re-examination of the plan. This implies that the pace of implementation is governed largely by physical factors such as the avail-

ability of materials, and to a lesser extent, probably, of certain grades of skilled worker, and by the delivery of locomotives, rolling stock, and other items. Apart from the increase in the efficiency of the railways, especially in the movement of goods, and the consequent improvement in their financial position that will result from use of new equipment, the Government no doubt has in mind their potentialities as large-scale customers of industry who can mitigate the effects of the present recession. This applies especially to heavy industry. What changes are to be expected in the modernisation plan can only be guessed. In reply to questions on A.T.C., Mr. Watkinson stated that it would have been installed on 300 route-miles by the end of this year, besides the Western Region lines, and including the main line from Kings Cross to York; and that 191 route-miles had been equipped between May and October. This is striking testimony to the work of the engineers, manufacturers of equipment, and staff concerned. Government proposals for ways and means to enable the Commission to meet its deficit for 1958 are to be laid before Parliament in due course.

Victorian Railways Works Programme

G AUGE conversion and electrification work figures prominently in the Victorian Railways works programme for 1958-59, for which £5,800,000 has been allotted by the Government of Victoria from the Loan Fund. Some £750,000 is allocated to suburban works, which must be completed before a start can be made on the proposed Melbourne Underground. Apart from other essential works, which are detailed elsewhere in this issue, a large proportion of the funds is to be spent on a further 10 "T" class 900-h.p. diesel-electric locomotives, five of which will be delivered by the end of the financial year, and on the improvement of rolling stock. Nearly £720,000 will be spent on the construction or rebuilding of goods wagons in departmental workshops, mainly bogie and four-wheel covered wagons, and specialised wagons for several types of traffic. A notable development is the decision to fit a large number of existing vehicles with passenger-type bogies. This indicates an extension of the express freight service recently introduced to recapture some of the profitable business in fast perishable freight which has been lost to road transport.

Training for Higher Management

I N an organisation the size of the British Transport Commission it is important that young officers, destined to hold higher executive positions, should receive all-round management training before accepting additional responsibilities. Their initial training and subsequent experiences must necessarily be specialised in the department in which they serve, whether it be operating, commercial or engineering. This factor is realised by the Commission. To provide a broader outlook and advanced training for men from all branches of the service, a Staff College for Higher Management is being established at Woking. The existing staff training centre will be converted for the purpose. The Governing Body, recorded elsewhere in this issue, of the college, under the Chairmanship of Sir Brian Robertson, Chairman of the Commission, has been chosen wisely. It is rightly formed from men both inside and outside the Commission. The first Principal is to be Major-General W. D. A. Williams, who is at present Commissioner for Transport in East Africa.

Pakistan Manages E.C.A.F.E. Training Centre

SIGNATURE on October 30 of an agreement between the Government of Pakistan and the United Nations, whereby the former assumes, retro-actively to January 1, 1958, responsibility for conduct of the E.C.A.F.E. railway training centre at Lahore, regularises an existing situation. It also testifies to the efficiency of the largely British methods taught at Lahore with the help of signalling and allied equipment donated by British manufacturers and used partly in demonstration and instructional working of

one-and-a-half miles of 5-ft. 6-in. gauge track. The centre was opened in April, 1954. It is the result of co-operation between the Pakistan railways, and notably the North Western Railway; the United Nations Economic Commission for Asia & the Far East; and the United Nations Technical Assistance Administration. Training in operating and signalling is given to staffs of the railways in Asia of E.C.A.F.E. member and associate member countries, and of the Iraqi and Persian State Railways. This embraces a large proportion of railways in the continent, differing widely in extent, gauge, and economic and geographical environment. Many of them follow British practices in operating and signalling, as do the North Western and Eastern Bengal Railways of Pakistan.

Overseas Railway Traffics

EAST African Railways & Harbours approximate railway revenue for the month of September, 1958, was £1,607,000 compared with £1,476,000 in September, 1957, an increase of £131,000. The railway revenue for the first nine months of 1958 was some £14,115,000, compared with £12,945,000 during the same period of 1957. With the exception of other coaching traffic which declined by £18,000, receipts from all sources have shown increases, notably passengers £129,000, and goods £911,000. Harbour earnings during September declined by £45,000 compared with September, 1957. Operating revenues of the Canadian National Railways for September, 1958, amounted to \$57,841,000. Expenses, taxes, and rents totalled \$57,879,000, resulting in a net operating income deficiency for the month of \$38,000. In September, 1957, operating revenues were \$58,458,000, expenses, taxes and rents were \$64,120,000 and the net operating income deficiency was \$5,662,000. Canadian Pacific Railway revenues for September were \$37,297,946 (against \$39,345,607 for September, 1957) and railway expenses \$34,493,506 (\$36,252,081), so that net earnings were \$2,804,440 (\$3,093,526). Aggregate net earnings from January 1, were \$24,747,133 (£24,658,046). Net railway earnings of the West of India Portuguese Guaranteed Railway Co. Ltd. for the 10-day period ending October 20, 1958, were Rs. 31,580 compared with Rs. 105,096 in the corresponding period of 1957, a decrease of Rs. 73,516.

Solving the Problem

FUNDAMENTALLY, all engineering problems resolve into a mathematical formula in the form of an equation. When these are concerned with scientific theory, such as is handled by the Research Department of British Railways, the resultant equation is often complex. The department aids all others in design calculations, and to assist them in their deliberations, an electrical digital computer, described elsewhere in this issue, has been installed at Derby. There is no question of the machine replacing manpower; mathematicians will still be required to prepare instructions to be fed into the machine, but the increased scope will enable far more complex calculations to be performed in a fraction of the time. The fact that the machine is not designed for one specific purpose makes its use extremely wide. The work to which it has already been put should encourage engineers in all regions to come forward with their problems. In this way the capital expenditure will be well justified and the equipment will be a considerable asset to British Railways modernisation programme.

Road and Rail Passenger Traffic Problems

THE annual dinner of the Public Transport Association is an opportunity for senior officers of British Railways and London Transport Executive and of the many bus undertakings in this country to discuss their common interests as public carriers. The Chairman at last week's dinner in the Connaught Rooms, W.C.2, was Mr. T. Robert Williams. As one of the leaders of the bus industry, he reminded his audience, which included Mr. G. R. H. Nugent, Joint Parliamentary Secretary to the Ministry of Transport & Civil Aviation, of the disabilities, such as

the fuel oil tax and the restrictions on the dimensions of road vehicles, of which his industry complains. Mr. Nugent stressed the importance placed by the Government on efficient public passenger transport, partly as a means of easing the traffic problem in cities, which had been aggravated by the increase in the number of private motor-cars. Railways, and more particularly the L.T.E. Underground, are doing much to alleviate this situation. He referred also to the falling away of bus traffic in rural areas caused largely by the growth of private transport. This also is affecting railway passenger traffic in some districts much more than does bus competition.

Strike Threat to Canadian Railways

THE strike threatened on the Canadian Pacific and Canadian National Railways from December 1, seemed less likely on news earlier this week that the Board of Transport Commissioners had recommended an increase of 17 per cent. in freight rates. Fifteen unions of "non-operating" railway staff, representing some 130,000 men in the goods depots, offices, and maintenance shops of the two major railways and their subsidiaries, had expressed their intention to stop work if they did not obtain the wage increase of about 14 cents an hour recommended by the Federal conciliation board. The railway companies were prepared to grant this increase on condition of an increase in freight rates sufficient to meet an extra wage bill of some \$60,000,000 (about £21,400,000) a year. They had asked for a 19 per cent increase in rates. While the Commissioners did not estimate what sum the recommended increase would yield, it has been estimated at \$25,000,000 for the C.P.R. and \$32,000,000 for the C.N.R. The award of a freight rate increase on the basis of assessed operating costs is believed to be unprecedented in Canada. Meanwhile appeals against rate increases are likely from the Prairie and Maritime provinces, whose produce and imported goods must be conveyed long distances by rail.

New Southern Region Training School

ON November 19 Mr. C. P. Hopkins, General Manager of the Southern Region of British Railways, opened a new training school for engine drivers at Stewarts Lane Locomotive Depot. Stewarts Lane, for long a steam engine depot, is being re-phased as a key maintenance centre under the electrification and diesel-electricification schemes now under way on the Southern Region. The new school, which has a capacity of 42 trainees, will run simultaneous three-week courses in electric locomotive, electric train, and diesel locomotive driving. Special power-operated diagrams, sectional models, and epidiascopes will be used. The school has its own messroom equipped with modern catering facilities, and an instructors' study in addition to its three classrooms. The building is centrally-heated. Practical experience will be gained in the new electric locomotive maintenance depot also at Stewarts Lane and, when complete, at the two depots for electric multiple-unit and diesel-electric stock now under construction. At least another four hundred trained men are required on the Region by June, 1959.

Simplified Laying of Long-welded Rails

A METHOD of laying long-welded rails in 600-ft. lengths with the minimum expenditure of time and manpower is described and illustrated on page 625. It was devised, and has been adopted, by the department of the Chief Civil Engineer of the North Eastern Region of British Railways, Mr. A. Dean. The main features are the high capacity, in terms of track-mileage, of the 11 bolster wagons on which the lengths are borne; the feeding out of the lengths at track-width from the rear wagon down on to the track; the simplicity of the gantry for lowering the ends of the new lengths when the operation has been completed. At present, the lengths consist of two 300-ft. welded lengths fishplated together, but in the near future 600-ft. long-welded sections will be laid. The work done

last week on the up East Coast main line between Northallerton and York demonstrated that this method is as successful with "AD" type concrete as with timber sleepers.

Research in Wagon Buffing and Drawgear Design

HYDRAULIC engineering is applied in some relatively unfamiliar settings in the control and operating gear used at the railway wagon equipment test site of Dowty Hydraulic Units Limited at Ashchurch, Gloucestershire, described on page 622. Based on precise observations made from close range ciné film of relative movements between wagons in service at varying speeds, typical working conditions are faithfully reproduced in a series of static test rigs used for fatigue testing of hydraulic buffers and automatic wagon couplers. At the same site a steep double ramp provides means of obtaining within a limited space the required acceleration for actual railway wagon buffer impact testing in simulated violent shunting conditions. Full electronic instrumentation is used for recording results. Extremely sharp curves with changing vertical levels, a straight run of track for speed testing, and a 70-ton concrete stop block complete the equipment on the site, which is claimed to be the first of its kind in Great Britain.

An Opportunity Missed

THE Opposition took the occasion of the Second Reading debate on the Factories Bill in the House of Commons on Monday to chastise the Government for omitting to implement the recommendation of the Gowers Committee that certain provisions of the Factories Acts should be extended to the railways. The Government explanation of the omission was largely based on the large expenditure of the Commission on improvement to its safety and welfare facilities, claimed by the Parliamentary Secretary to the Ministry of Labour & National Service, Mr. Richard Wood, to be £15 million since 1948. The Minister, Mr. Iain Macleod, gave the further reason that to do so would endanger overburdening the factory inspectorate. In the event, the Opposition gave notice that it would seek to amend the Bill in Committee to bring the railways within its provisions. On this the Government is unlikely to move, as it showed no signs of relenting.

The position is that at present the Factories Acts apply to railway shops only and not to other railway premises. The Gowers Committee was specific in its recommendation that locomotive running sheds and comparable installations should come within their ambit. The Opposition argues that its recommendations as to offices and premises of other non-industrial workers should be applied equally to railway employees. The Committee reported in 1949, and it was not until 1955 that the then Prime Minister, Sir Anthony Eden, informed a Trades Union Congress deputation that the regulations regarding the health, welfare and safety of railwaymen were in draft and would probably be enacted in the 1956-57 Parliamentary session. Other Ministers were subsequently more definite and gave pledges that legislative action would be taken, though on occasion lack of Parliamentary time was called in aid.

Circumstances may have changed since the Gowers Committee reported, but the only relevant change since the Government accepted the principle that railwaymen workers should be included, has been the deterioration in the financial position of the B.T.C. As the Government and the Commission both argue that large sums are being spent on improving conditions and bringing them up to the statutory requirements applicable to factories, it may be hard to produce financial embarrassment as a valid reason for failure to act. Admittedly, neither the Government nor the Commission has maintained at any time that for this reason workers on the railways should endure worse conditions than those in outside industry. The Commission's case against being subject to statutory provisions

was different. The Railway Executive contended before the Committee that because the railways were publicly owned, it was unnecessary to impose statutory requirements on them. This was understandably rejected by the Gowers Committee, for other nationalised industries are not exempt. In fact, special statutes covering the coal mines have been introduced since nationalisation. As regards the Minister's fear that the factory inspectorate would be over-burdened, his attention was drawn to the Committee recommendation that, as far as railway workers were concerned, enforcement of minimum standards of welfare and safety should be the responsibility of the Minister of Transport, who should be empowered to establish an inspectorate for the purpose.

Mr. Wood pointed out that the important thing is to bring the greatest benefit to railway workers. In the Government view, to bring the railwaymen within the scope of the Bill "would not produce a penny more to the benefit of people working on the railways than we have been able to produce over the last five or six years." He added that the action taken had resulted in as much as would have been done under any legislation.

There is no doubt that, in consultation with the trades unions, facilities relating to safety and welfare have been greatly improved. Despite the millions of pounds spent, however, the British Transport Commission no doubt cannot do all that is required, as it must have regard to the priorities of modernisation. The latter, as it proceeds, will bring some release to the railwaymen from the exceptionally adverse conditions in which they must often work because of the nature of railway operation and the equipment employed. Extension of diesel and electric traction, for instance, will improve conditions for footplatemen and shed staff. The morale and good will of railwaymen are of the utmost importance. Their case for statutory protection was forcefully made by their spokesmen during the debate. As Mr. David Jones pointed out, they know that the sole decision on what shall be done rests with the Commission. The Government found, for what may be good reasons, even although it did not convince the Opposition, that it was not able to use the Bill as the vehicle for extending the Factories Acts to the railways as recommended by the Gowers Committee and agreed by it in principle some years ago.

Concrete Bridging in the L.M. Region

IN connection with the electrification of the Crewe-Manchester main line of the London Midland Region no fewer than 88 bridges have had to be either altered or rebuilt. Some of them have already been reconstructed, including the Stockport Road bridge, described and illustrated in our issue of September 19. On the same Stockport to Manchester London Road section another bridge, work upon which has now begun, is over Hyde Road; it carries six tracks, however, as opposed to four at Stockport Road bridge.

The existing Hyde Road structure was built in 1876 and consists of main and cross girders and a plated floor all in wrought iron; the permanent way is carried on longitudinal timbers. This skew superstructure has four box-section main girders, with a span of 117 ft. 6 in. on the skew and 65 ft. on the square between abutments. The two outer girders are simple spans, but the two inner ones are continuous over three spans, with two rows of intermediate cast-iron column supports positioned in line with the pavement kerbs.

In the new bridge these intermediate supports will be replaced by a full-width one in the centre of the roadway. It will be composed of three reinforced-concrete portal frames placed end-on, one frame carrying each of three side-by-side pre-stressed concrete slab superstructures, continuous over the two spans and carrying two tracks. The slabs will be pre-cast in transverse sections and be edge-stiffened with in situ concrete. There will be 44 units per slab; each unit will be pre-stressed along its length with pre-tensioned $\frac{1}{2}$ -in. dia. steel wire strands. The units, when placed together side by side to form the full length of one

slab, will be post-tensioned along the length of the slab by 13 cables of 72 wires each and six of 64 wires each; all wires will be of 0.276 in. dia.

The erection of the new superstructure will be carried out as follows. The units will first be assembled on rolling-in trestles and staging alongside the existing bridge, and then each complete slab will be rolled in on three separate occasions. Meanwhile, the part of the existing superstructure over the abutments will be removed and the tracks will be temporarily supported on waybeams and trestling, to be removed when the new bridge units are rolled in. In final position the units will be seated on continuous rubber bearings on the abutments and central support.

British Transport Commission Traffic Receipts

NO basic improvement is shown in British Railways freight and parcels receipts for Period 11, the four weeks ended November 2. They continued below the corresponding figures for last year under all heads. Minerals at £3,474,000 are seriously below the 1957 figure (£4,401,000); as were merchandise and livestock at £7,459,000 (£8,710,000) and coal and coke at £9,278,000 (£10,777,000). The totals for this period are some improvement on the previous four weeks, but seasonal increases would be expected in any case. For the 44 weeks to November 2, aggregate railway freight receipts were £273,261,000, or £24,013,000 less than a year ago, when traffic could not be said to be satisfactory. The total freight receipts from British Road Services, shipping services, and inland waterways for Period 11 at £4,409,000 were £67,000 less than for the same period of 1957. Most of this total is B.R.S. receipts, which shows that road haulage has been suffering, like the railways, from lack of traffic. The main reason for the poor freight receipts is the recession in industry and trade, and notably in the iron and steel industry.

	Four weeks to November 2, 1958		Incr. or decr.	Aggregate for 44 weeks		Incr. or decr.
	1958	1957		1958	1957	
	£000	£000	£000	£000	£000	£000
Passengers—						
British Railways	9,292	8,950	+ 342	119,394	120,654	- 1,260
London Transport:						
Railways	1,879	1,795	+ 84	20,564	19,510	+ 1,054
Road services	4,308	4,498	- 190	40,287	50,329	- 10,042
Provincial & Scottish buses	4,368	4,174	+ 194	51,475	49,248	+ 2,227
Ships	280	267	+ 13	6,429	6,396	+ 33
Total Passengers	20,127	19,684	+ 443	238,149	246,137	- 7,988
Freight, Parcels & Mails—						
British Railways:						
Merchandise & live- stock	7,459	8,710	- 1,251	78,059	91,315	- 12,256
Minerals	3,474	4,401	- 927	37,910	45,011	- 7,101
Coal & coke	9,278	10,777	- 1,499	103,025	106,473	- 3,448
Parcels, etc., by passenger train	4,147	4,193	- 46	43,846	43,112	+ 734
Collection & de- livery, etc.	937	1,057	- 120	10,421	11,363	- 942
Total Freight, British Railways	25,295	29,138	- 3,843	273,261	297,274	- 24,013
Others*	4,409	4,476	- 67	46,246	46,895	- 649
Total Freight, Parcels & Mails	29,704	33,614	- 3,910	319,507	344,169	- 24,662
Total	49,831	53,298	- 3,467	557,656	590,306	- 32,650

* Inland waterways freight, road haulage, and ships

The position as to British Railways passenger traffic is slightly more encouraging. Total receipts at £9,292,000 slightly exceed last year's figure of £8,950,000. As there have been no significant fare increases in the past 12 months, the increase is an absolute, if small, gain. The slight decrease, compared with last year, in the aggregate for the 44 weeks, is largely accounted for the beginnings of the recession, which during the summer holiday weeks resulted in many people, especially in the industrial

Midlands and North, travelling less far on holiday, or even cancelling their holidays.

London Transport road service receipts for the period, which show a considerable drop compared with last year, reflect the downward trend in this traffic. The great decrease in aggregate L.T.E. bus traffic is due mainly to the bus strike last summer. Provincial and Scottish bus traffic at £4,368,000 compare favourably with last year's total of £4,174,000. There have been some increases in fares during the past year. Ships' passenger receipts at £280,000 are well up on the corresponding figure for 1957, though they are no doubt offset to a considerable extent by higher operating costs.

BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS PERCENTAGE VARIATION 1958 COMPARED WITH 1957

	Four weeks to November 2	44 weeks to November 2
British Railways—		
Passengers	+ 3.8	- 1.0
Parcels	+ 1.1	- 1.7
Merchandise & livestock	- 14.3	- 14.5
Minerals	- 21.0	- 15.7
Coal & coke	- 13.9	- 3.3
C. & D. services	- 11.3	- 8.2
Total	- 9.1	- 6.0
Ships, passengers	+ 4.8	+ 0.5
British Road Services, Inland Waterways and Ships (cargo)	- 1.4	- 1.3
Road Passenger Transport, Provincial & Scottish	+ 4.6	+ 4.5
London Transport—		
Railways	+ 4.6	+ 5.4
Road services	- 4.2	- 19.9
Total	- 1.6	- 12.8
Aggregate	- 6.5	- 5.5

The State Railway of Thailand

WE have received quite recently a copy of the annual report on the State Railway of Thailand for the year 1954. Revenues from passenger and freight traffic for that year, after deducting working expenses, show a net surplus of baht 48,224,171, or baht 15,598,673 more than in 1953. (The present rate of exchange is reported as nearly baht 58 to the £.) This improvement was due mainly to better transportation service. Gross revenue in 1954 totalled baht 379,719,203 as compared with baht 362,819,543 in 1953, an increase of 4.66 per cent. The number of passengers increased by 3,986,663 and freight and livestock by 29,772,782 ton-km. Working expenses rose by baht 2,816,787 as a result of increased traffic, and higher costs of fuel, salaries and wages, and totalled baht 332,900,377.

During the year under review 38 new third-class coaches were received from Japan, and placed in service. An agreement was concluded with the Malayan Railway for joint traffic working over both railways and an international express service was inaugurated on January 2, 1954, between Bangkok and Prai, on the mainland opposite Penang. To speed up traffic a number of mixed trains were replaced by passenger trains, and additional passenger and freight trains were run.

Fifty-nine steam locomotives were scrapped during the year leaving 328 in service as well as 44 diesel locomotives. Altogether 47 new coaches replaced 41 scrapped, and there were 622 in traffic at the end of the year. Similarly 44 new and 36 rebuilt wagons were added, but 274 were scrapped, leaving 6,201 on line.

The route-length open for traffic on December 31, 1954, was 3,332 km., there being no new lines opened or sections closed during the year. Three important bridges were being reconstructed. Also 13 new sections of line were under survey, and one was being constructed; this was the 84-km. Kaengko-chaibadal line branching from the North Eastern main line and forming part of the Kaengko-Buayai cutoff. It involved a large multi-span through-truss type bridge over the River Pa-Sak. No further progress in negotiations with the Royal Cambodian Railway for the construction of a Thailand-Cambodian rail link was made during the year.

Brigadier Langley's Annual Report

THE report for the year 1957 of the Chief Inspecting Officer of Railways, Brigadier C. A. Langley, records a decrease in train accidents, properly so called, compared with 1956, of from 1,226 to 1,205, but a regrettable increase in the number of casualties. In 1956 no passenger lost his life in such an accident and only three had done so in 1957 when in December came the disaster at St. Johns, Lewisham, with 89 passengers killed, the third worst to take place in the United Kingdom. Total casualties attributable to this class of accident were 112 killed, of whom 15 were occupants of vehicles at level crossings, and 962 injured compared with 18 and 590 in 1956. There were 202 train accidents at level crossings, of which 146 were collisions with gates across the line and 56 with road vehicles. Only one occupant of these, however, was killed at a public crossing, but 14 lost their lives in 10 accidents at occupation crossings as did eight pedestrians at all types, including footpath crossings. Two formal inquiries into crossing accidents proved necessary where railway staff were at fault, leading to two fatalities. Figures, revised in 1957, show that there were 4,667 public crossings, of which 281 were without gates, the latter all being on lines where rail speeds are low and traffic light. Growth of road traffic has been such, however, on some roads over the Totton, Hythe

per cent, a little less than in the previous year. Train crews had to answer for 168 collisions and 65 derailments—against 168 and 70 in 1956—while failures of signalmen caused 24 and 14 respectively, against 30 and 20 in 1956. Technical defects, in many cases with human failure associated, led to 18 collisions and 87 derailments, 10·7 per cent of the total. Accidents attributable to other causes formed 37·8 per cent of the total at 456, with an appreciable fall in those due to snow, landslides and floods. Fires in trains were 71, again a low figure compared with the average of 141 for the period 1951-55; no passenger was injured in one.

Total route mileage open at the commencement of the year was 19,252 and fell by 60 in the course of it, mainly by the closing of unremunerative branch lines; no electrification scheme envisaged in the modernisation plan was brought into operation, and electrified track mileage remained approximately the same. Recruitment of staff proved easier and the total employed rose from 593,245 to 596,584. Passenger journeys increased by 3·3 per cent and passenger miles by 5·6 but freight tonnage fell by 1·0 per cent. Total main line train miles increased by 1·6 per cent from 376 to 382 million. "There was a satisfactory decrease in the number of collisions and derailments for which signalmen were primarily responsible," it is stated, "and although none was sufficiently serious to

TRAIN ACCIDENTS: PRIMARY CAUSES

	Collisions	Deraillments	Running into obstructions	Fires in trains	Miscellaneous	Total
1. Failure of train crews (including guards):—						
(a) Passing signals at danger	14	11	10	—	—	35
(b) Other irregularities or want of care	154	54	61	2	4	275
2. Failure of signalmen:—						
(a) Irregular block working	9	1	—	—	—	10
(b) Other irregularities or want of care	15	13	8	—	—	36
3. Failure of other operating staff	68	8	98	3	—	177
4. Failure of train crews and/or signalmen and/or other staff	39	14	18	—	—	71
5. Faulty loading	3	9	—	4	1	17
6. Technical defects						
(a) Engines	4	16	4	2	—	26
(b) Vehicles:—						
(i) Drawgear	4	14	—	—	—	18
(ii) Other	6	29	—	10	—	45
(c) Track or signalling apparatus	4	28	2	—	1	35
(d) Defective structures (other)	—	—	4	—	—	4
7. Other causes:—						
(a) Snow, landslides, floods	—	—	6	—	—	6
(b) Animals on the line	—	—	87	—	—	87
(c) Misconduct of the public	156	2	100	5	4	267
(d) Miscellaneous	15	15	21	45	—	96
Total	491	214	419	71	10	1,205

& Fawley Light Railway that consideration is being given to providing improved safety arrangements, including possibly automatic lifting barriers across one road, where an accident occurred. There are 19,701 occupation or accommodation type crossings, where the great majority of collisions with road vehicles occurred, mostly as a result of misconduct of the public. A slight decrease in the total number of cases, despite the continued increase in motor traffic, is thought to indicate that more care is being taken by road users and farm workers. "The problem of maintaining the high standard of safety at public level crossings," says the report, "has in recent years become more complex owing to the difficulty in finding suitable staff and arranging for competent reliefs; the cost of attendance at many crossings is also out of all proportion to the road traffic using them . . . the British Transport Commission received powers under the 1957 Act to replace manned gates at level crossings, either by half barriers, worked automatically by the train, or by full length barriers operated from near the crossing, or remotely from a signal-box. New provisional safety requirements for certain of these types of level crossing have been issued. Some schemes have already been submitted for the Minister's approval; others are under preparation. The development of these schemes will modernise level crossings, and in addition to effecting economies, should reduce delay to road traffic."

Analysis of the train accidents shows failures on the part of operating staff to have been responsible for 51·5

warrant a formal inquiry a number were investigated in detail with the Regional Officers." There were in the 38 cases 10 instances of irregular block working. Failures of ground operating staff other than signalmen resulted in 76 collisions and derailments, compared with 84 in 1956, while those due to combined action of train crews and other grades came to 53, against 49 in 1956. There was some increase in the mishaps caused by faulty loading, but none of the nine derailments was serious. The higher number of accidents caused by errors of train crews—which dropped, however, somewhat during the year—compared "with those from signalmen's errors," observes Brigadier Langley, "reflect the different character of their work, in which safety depends almost entirely on personal attention to duty, and there are few mechanical or electrical aids which can be provided to assist crews in their work."

There has been since the war a steady decline in accidents resulting from disobedience to signals and in 1957 only 35 were recorded. Among them were five serious collisions, including the extremely grave case at St. Johns, and with the exception of the one at Staines, where a motor-man left against the starting signal at danger, all "might have been prevented by automatic train control of the warning type" and in addition four others less serious, making eight altogether. The B.T.C. standard system will be completed by the end of 1959 on 568 route miles, inclusive of the 268 between Kings Cross and Newcastle and 133 between Euston and Stafford. The report comments on the fact that during the last 12 years 55 per cent

of all passenger fatalities in train accidents have been due to overrunning of signals, and continues "the extension of automatic warning control to all main lines . . . and provision of many more colour-light signals . . . will do much to aid drivers in their responsible and vital task of observing signals in whatever weather conditions, and the introduction of increasing numbers of diesel and electric locomotives, with their unimpeded view ahead, should further improve matters. There remains, nevertheless, the problem of the apparently unaccountable lapses on the part of some drivers to observe signals of which there have been further examples since the year under review". The B.T.C., after discussions with Brigadier Langley and his colleagues, is to make a special investigation of this question with a panel of scientific advisers and the promised full co-operation of the trades unions.

FORMAL INQUIRIES

Eleven formal inquiries were required compared with eight in 1956. The report gives concise details of the essential facts involved in each, but as the individual reports were summarised in our pages, with diagrams, shortly after publication, only a few remarks on the more serious cases are given here.

The collision at Welwyn Garden City on January 7 arose from an express passing the outer distant signal at

caution and the outer and inner homes, with inner distant below the latter, at danger and, after exploding emergency detonators, entering irregularly the block section in advance and overtaking a local train. There was fortunately but one fatality, but the case was a very grave one from the operating point of view. The driver maintained that the motor operated outer distant had been "off." Two months later the same express, with another driver, overran the same signals but stopped in the station after exploding detonators. Exhaustive tests and investigations failed to find anything wrong with the signalling apparatus or controls and left no doubt that the signals had been properly against both trains. As, however, the outer distant had become the subject of discussion and possibly suspicion among enginemen it was replaced by a multi-aspect colour-light. The emergency detonators were considered not entirely satisfactory, and it was recommended to review the design to render explosions more penetrating.

At Chapel-en-le-Frith on February 9 a freight train got out of control when a joint in the steam brake system failed, near where a stop to pin down brakes would have been made. The fireman, on instructions, left the footplate to endeavour to pin some but without avail. The driver, however, remained on it to the last and lost his life in the ensuing collision, being posthumously awarded the George Cross. A badly brazed butted joint had become

CASUALTIES IN TRAIN AND MOVEMENT ACCIDENTS

	Total	Killed				Injured				All casualties per million train miles	
		Total	Passengers	Railway servants	Other persons	Total	Passengers	Railway servants	Other persons	Killed	Injured
1915-19	6,122	616	174	341	101	5,506	1,731	3,600	175	1.8	16.5
1920-24	6,638	407	92	248	67	6,231	2,577	3,518	136	1.1	17.0
1925-29	7,526	368	91	210	67	7,158	3,733	3,267	158	0.9	18.0
1930-34	7,440	308	74	183	51	7,132	4,394	2,592	146	0.7	17.0
1935-39	8,376	338	86	198	54	8,038	5,342	2,576	120	0.8	18.0
1940-45	1,222*	477	141	254	82	745*	256*	455*	34*	1.2	1.9*
1946-50	8,878	347	91	204	52	8,531	5,647	2,763	121	0.9	21.2
1951-55	7,910	295	90	165	40	7,615	5,199	2,315	100	0.7	18.6
1946	9,529	413	120	236	57	9,116	5,691	3,281	144	1.0	22.6
1947	9,203	409	148	218	43	8,794	5,871	2,785	138	1.1	22.9
1948	8,683	340	87	191	62	8,343	5,554	2,678	111	0.9	20.9
1949	8,651	285	44	188	53	8,366	5,640	2,625	101	0.7	20.2
1950	8,329	290	60	187	43	8,039	5,483	2,446	110	0.7	19.5
1951	8,176	283	97	158	28	7,893	5,328	2,482	83	0.7	19.2
1952	8,470	386	160	180	46	8,084	5,505	2,472	107	0.9	19.7
1953	7,771	306	66	185	55	7,465	5,051	2,304	110	0.7	18.0
1954	7,558	211	40	139	32	7,347	5,029	2,229	89	0.5	17.8
1955	7,573	288	89	162	37	7,285	5,083	2,089	113	0.7	18.3
1956	7,529	237	49	147	41	7,292	5,166	2,044	82	0.5	17.7
1957	8,149	320	138	151	31	7,829	5,565	2,195	69	0.7	18.7

* Serious injuries only

ACCIDENTS, EMPLOYMENT, AND OPERATING STATISTICS

	Class I		Railway servants (March)	Passenger journeys originating (incl. season tickets)			Freight-tonnage originating (excl.free hauled)	Ton-miles (incl. free hauled)	Miles operated				Passenger-miles (estimated)	
	Train accidents	Failures of rolling stock or permanent way		Total	Main line railways	London Transport			Main line railways			London Transport: Train	Main-line railways	London Transport
									Train	Shunting	Other			
	Number	Thousands		Millions										
1920-24	1,009	11,153	699 ^a	1,848	—	—	303	17,457	369	121	28	—	—	—
1925-29	941	9,141	679	1,661	—	—	298	17,562	401	123	29	—	—	—
1930-34	796	5,772	602	1,612	—	—	270	16,060	416	113	27	—	—	—
1935-39 ¹	745	4,149	592	1,733 ^a	1,255 ^a	478 ^a	281	17,230 ^a	412	115	29	32	18,993 ^a	2,297 ^a
1940-45 ¹	387	160	604	1,661	1,210	451	288	23,844 ^a	356	124	37	26 ^a	33,191 ^a	2,608 ^a
1946-50	1,250	4,382	658	1,692	1,075	617	271	21,295	372	111	39	33	26,464	—
1951-55	1,200	2,743	609	1,574	986	588	283	22,300	374	99	39	34	24,101	—
1951	1,280	3,436	622	1,624	1,001	623	285	22,902	376	104	40	35	24,302	—
1952	1,243	3,022	625	1,574	989	585	285	22,391	376	101	40	35	24,048	—
1953	1,123	2,675	616	1,565	985	580	289	22,766	379	100	40	34	24,143	—
1954	1,197	2,504	600	1,566	991	575	283	22,089	378	97	40	34	24,235	—
1955	1,156	2,080	586	1,543	967	576	274	21,353	363	92	38	35	23,777	—
1956	1,226	2,009	593	1,577	1,005	572	277	21,473	376	92	38	36	24,546	—
1957	1,205	1,679	596	1,630	1,076	554	274	20,878	382	91	39	35	25,923	—

¹ Having regard to the altered basis under the Modification Order, fewer accidents were reportable and only serious damage is included as from September 1, 1939, to December 31, 1945. The comparison is unchanged as regards traffic, movement and staff employed

² Four years, 1921-1924

³ Four years, 1935-1938

⁴ For year ended August, 1939, only

⁵ Estimate for main lines—1942-1945

⁶ Loaded only

⁷ Three years, 1943-1945

distorted and overstrained, but this was not readily noticeable and the maintenance staff were not criticised; arrangements were made, however, to replace butted by coned joints and carry out additional inspections until the conversions were completed. Brazing methods also were improved. The derailment at Uddingston on June 17 arose from an oversight of an examiner who had had to deal with a broken brake linkage at Carlisle, 94 miles away, but omitted to release the brake thus leaving leading bogie wheels to travel thence locked; they developed grooves in their tyres and consequently outside lips, resulting finally in damage to a crossing wing rail. One passenger was killed. It was decided to re-examine the design of the brake rigging to ascertain whether reliability could be improved.

Another case of overrunning signals occurred at Herne Hill on June 30 when an express ran into a light engine. Despite the enginemen's assertions there was no doubt, in view of the very complete controls provided, that the distant and home signals were "on". At Staines on August 9 a motorman started, on receiving "right away" from the platform, against the fixed signal and collided with a light engine. Although no change in the long established rule placing the full responsibility for observing the fixed signals on drivers and motormen was thought necessary, it was recommended to review conditions where guards or station staff cannot see the starting signal and decide whether some repeater should be provided. Two level crossing accidents, at Allanfean on September 14 and Little London on November 6 were due to failure of a signalman and gateman respectively. The recommendations in the latter case included considering the use of automatic half-barriers, the location being very difficult to deal with efficiently by older methods.

The collision in dense fog at St. Johns on December 4 much overshadowed, by the gravity of its results, every other case recorded during the year. Misinterpretation of describer messages caused a signalman to stop a train unnecessarily, to await a clear path. This in turn stopped another which, on the rising gradient, had the brakes hard on. A steam express failed to observe the two warning and one stop indications given by multiple-aspect colour-light signals, in service there for nearly 30 years with some 1,000 trains per day passing without serious mishap. Both trains were full and the standing (electric) train suffered severe telescoping. By great misfortune the derailed steam train struck away a support of a heavy overbridge: some girders collapsed, crushing crowded coaches and adding greatly to the death roll. A train on the line crossing it was stopped in time by its motorman's vigilance. There was no fault in the signalling equipment but investigations were complicated by the varying statements made by the steam train driver, acquitted of a manslaughter charge after a jury failed to agree. He finally admitted that he had not seen the warning aspects and was taken by surprise by the red one. "The possibility of using train-stops in addition to, or in substitution for, warning control," says the report, "was examined but although necessary on tube railways they were not considered suitable for main lines. Statistics showed that this additional safeguard would add little to safety of railway travel and it would require complete resignalling of many of the main lines, which was impracticable." In view of the numerous comments and suggestions to which the accident naturally gave rise Brigadier Langley points out that neither radar nor radio is at present suitable as a substitute for signalling and that British Railways' latest system of warning control is "the best practical aid to drivers in controlling their trains safely under all weather conditions"; further that the possibilities arising from the development of electronics are "not being neglected."

The report gives particulars also of a number of accidents dealt with without formal inquiry, but disclosing a variety of operating faults by various grades and teaching their own lessons. They include cases of irregular block working, mistakes in making movements under calling-on signals, failures of electrically operated points, sand on a track circuit, buffer stop collisions, failure to respect starting signals, premature reversal of points, etc., with three cases

in which road vehicles fell on the line, and some in which mechanical failures led to an accident.

EQUIPMENT, RAILS, AND STRUCTURES

Failures of these totalled 1,679, or 330 fewer than in 1956, the main reduction being in coupling failures which dropped from 1,572 in 1956 to 1,258, reflecting clearly the good results obtained with the improved designs found on modern vehicles. Failures, other than of couplings, on engines and stock amounted to 110; 20 collisions and derailments arose from defects in engines and tenders, and 53 from those in vehicles, chiefly freight wagons. There was one case in the classification of bursting of boilers, tubes, etc., with 18 failures of engine machinery, springs, etc., while those of engine and tender tyres and axles were 23, much the same as in earlier years. Broken rails again showed a satisfactory decline at 198, 36 fewer than in 1956, and 154 below the 1951-55 average, reflecting "credit on the maintenance staff responsible for renewal and strengthening of the permanent way". Other track and structure failures rose slightly, with more flooding of permanent way and slips in cuttings. Renewals were well up to standard, and 2,005 track miles—excluding London Transport—were wholly or partially dealt with compared with 1,978 in 1956; 1,113 miles were laid with heavy flat-bottom rails, bringing their total mileage to 7,699, 22 per cent of the running lines. Further progress was made with mechanical plant and equipment, and "work study" techniques were extended. The improved standard of track allowed of 90 m.p.h. and more being permitted on main lines. Long welded rails were extended with 27½ more miles laid, compared with 13½ in 1956.

ACCIDENTS TO SERVANTS

In 1957 147 railway servants were killed and 2,096 injured by "movement" as distinct from "train" accidents. There was an increase of 133—of which three were fatalities—over 1956, which itself witnessed the lowest figures yet recorded; in comparing such figures the rise in the number of staff needs bearing in mind. "Since it is normally a matter of chance in a movement accident," says Brigadier Langley, "whether a man is killed or seriously injured a more realistic comparison is made by totalling the fatalities and serious injuries which occur each year" In 1957 this came to 10 per cent more than in 1956. It is of interest to note, however, that the cases of staff at work on the line being struck, all the subject of inquiry by the Employment Inspectors, amounted to 69, the lowest since 1943 and 1944; in both those years the figure also was 69. Of the 33 fatalities under this heading six were due to inadequate protection, six to the fault of the lookout, 11 to acting incorrectly although aware of the train and 10 to being unaware of it through want of vigilance. The report gives details of these and various other cases, some presenting unusual features, including accidents to men walking or standing on the line on duty—casualties from which were regrettably high—shunting accidents and others in which movement of vehicles was concerned. Total casualties under coupling or uncoupling vehicles and other shunting accidents amounted to 960, with five more fatalities. Of the eight fatalities which occurred in the course of coupling, three were the result of remaining between the vestibules of coaches while movements were made, with disregard of safety advice given in long established rules. Twelve men engaged in shunting lost their lives, compared with seven in 1956, by stepping into the path of the movement with which they themselves were dealing, or forgetting their safety while conducting shunting and inadvertently moving foul of trains on adjacent lines, a lapse that shunters and guards must constantly be on their guard against. Non-movement accidents are similarly reviewed. Total fatalities due to all movement on rail, of any kind, came to 0.7 per million train miles. Referring to the grievous consequences of so many cases the report stresses that a large proportion of movement accidents are "attributable to accidental causes" but goes on to say "all too many were the outcome of forgetfulness . . . and lack of thought"; they could have been avoided by taking proper care and keeping more alert to the dangers present.

THE SCRAP HEAP

No Alternative

Sign in a railway station in a small Missouri town: "All parcels, packages, and grips left and not checked must be checked or cannot be left in depot."

Historic New Zealand Locomotive

The engine, No. 386, which hauled the first train from Wellington to Auckland on the North Island Main Trunk Line of the New Zealand Government Railways, has been purchased by the Mayor of Taumaranui, Mr. F. D. House, and presented to the borough, one of the main centres of the King Country, through which the line passes. The engine was handed over to the borough at a ceremony commemorating the opening of the North Island Main Trunk Line. Editorial reference to this jubilee was made in our November 14 issue.

Thomas Cook 150th Anniversary

Thomas Cook, founder of the world travel organisation, was born in Melbourne, Derbyshire, on November 22, 1808. The firm which bears his name and does business with more than 5,000,000 clients a year, came into being on July 5, 1841. On that date Cook, a devoted temperance worker, arranged for 570 supporters to travel from Leicester to Loughborough to attend a temperance meeting at a round-trip fare of 1s. for 24 miles. For his first real tourist venture in 1845, he produced a 60-page booklet in connection with a rail trip from Leicester to Liverpool and the North Wales coast.

Cook's tours were extended to Scot-

land in 1846; to Ireland in 1849; and to the Continent of Europe in 1855. For the Great Exhibition of 1851, he brought 165,000 persons to London from all parts of the British Isles. Cook died in 1892, at the age of 84, by which time his travel organisation was known throughout the world. The share capital is now held by the British Transport Commission.

Girls, Roundhouse-Style

Women may be getting ahead with the Census Bureau reporting 360 female locomotive engineers and 390 female railroad brakemen. But where do these hoop-skirted "hogheads" and "shacks" operate? What do they do, run their own railroads?—From a letter to "Newsweek."

Three hundred and sixty American women reported to the Census Bureau that they worked as locomotive engineers. However, no railroad source in the country has been able to verify this claim. On the other hand, both the Pennsylvania and Chicago North Shore & Milwaukee railroads employ women as brakemen.—Comment by Editor of "Newsweek."

The First Railway in Turkey

During the past week all Smyrna has been in a state of excitement, owing to the arrival of Lord Stratford de Redcliffe [the British Ambassador]. One of his principal objects in visiting the place was to inspect the works of the Smyrna & Aidin Railway. . . . After inspecting the various works, and examining the plans of the engineers and architect, his Lordship proceeded up the line to

the rock cuttings made through the valley of St. Ann. Lord Stratford, who seemed in most excellent health and spirits, determined to ride on the locomotive itself. Accordingly he mounted the *St. Sophia*, and proceeded at a rapid pace along the line.—From "The Times" of November 16, 1858.

[The foundation stone of Smyrna (now Izmir) Station and the 10-mile section of railway from Smyrna to the village of Sedikoi was opened on October 30, 1858. This was the first section of the Smyrna Aidin Railway, for which a concession was granted to British interests on July 11, 1856. The line was built by British engineers, who began work in September, 1857. It was the last important Turkish line to remain in private hands. It was purchased by the Turkish Government for £1,826,000 as from June 1, 1935.]

News by Rail (1858)

By special engines, and boats across the Tay and Forth Ferries, we are enabled to lay before our readers the speeches of the Duke of Argyle and others at Dundee last night. For the completeness and success of the arrangements by which this was effected we are much indebted to the energy and the politeness of the Manager of the Edinburgh Perth & Dundee Railway, and of all those entrusted with the carrying out of his orders. The journey from Dundee to Broughty, from Broughty by boat to Ferry-Port-on-Craig from Ferry-Port-on-Craig to Burntisland, from Burntisland by boat to Granton, and from Granton to Princes Street Station, was performed in less than two hours, being by far the quickest journey ever accomplished on the line.—From "The Scotsman" of November 12, 1858.

[The first Tay Bridge was opened in July, 1878. Part of it collapsed in a gale in December, 1879. The Forth Bridge was opened in March, 1890.]

Great Northern

(See our November 7 issue)

Come, Irishmen, dry up your tears;
Stop moaning the fate of your name;
Abandon the worst of your fears;
Let others perpetuate fame.

In England, Great Northern has
flourished
For over a hundred long years,
And soon we shall have it re-nourished
As profits are now in arrears.

The pride we have in Great Northern
Is second to none, we declare;
In fact, its most likely far more than
You ever have felt over there.

So if you persist in bewailing
Now G.N. of Ireland is done,
You should get right aboard the next
sailing

And learn how the G.N. is run.

A. V. D

Great Northern House, N.W.1.

The Shape of Things to Come?



Photo]

[J. H. Johnson

Diesel multiple-unit set at Paddington, Western Region, shortly after its introduction on the Paddington-Reading service. Most of the suburban services from and to Paddington are eventually to be diesel worked

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

WESTERN AUSTRALIA

Suburban Track Renewals

Work is at present in progress on the relaying of the main line between Claremont and Subiaco on the Perth suburban system. The old 45-ft. lengths of rail are being replaced by 90-ft. lengths of welded 82-lb. rail.

Rehabilitation of metropolitan lines has been continuing for some months. New yards have been constructed at Subiaco and Claremont and when the Claremont-Subiaco section has been re-laid, work will commence on the East Perth-Bayswater section.

VICTORIA

1958-59 Works Programme

The Government Railways will spend £7,250,000 during the current financial year on important suburban and country works, and for purchasing and building new rolling stock. The money has been allotted by the Government from the Loan Fund.

About £750,000 will go towards suburban works, which must be completed before a start can be made on the construction of the proposed city underground railway. Largest amounts are for the Richmond area project (£300,000), third track between Melbourne and East Camberwell (£130,000), and duplication between Heidelberg and Macleod (£56,000).

Progressive conversion to broad gauge and electrification of the Upper Ferntree Gully-Belgrave line will take £165,000. The allotment of money will also enable a new suburban station, Jacana, between Glenroy and Broadmeadows, to be completed by the end of this year, and a total of £158,000 has been provided as the Department's proportional cost of grade separation works at various level crossings.

An investigation is also being made to see what level crossings on the main north-eastern line can be eliminated when the new standard gauge line from Melbourne to Albury is constructed.

A considerable sum will also be spent on improvements to rolling stock. Payments towards a further 10 "T" class 900-h.p. diesel-electric locomotives will absorb £510,000. Delivery of five is expected by the end of the financial year. The contract for the first batch of 30 "Harris" trains for the suburban service will be completed, and 13 of the 22 air-conditioned saloon-type country cars it is proposed to build will also be completed by the end of the financial year, taking £320,000.

As the Railways' share of the cost of the last four of 24 new air-conditioned cars for "The Overland," £68,000 has been provided. The four cars, two roomettes and two second-class open

saloons, are expected to be completed early in 1959/60.

Nearly £900,000 has been allocated for the construction or re-building of goods wagons in departmental workshops. This amount will be spent mainly on bogie and four-wheeled covered wagons for general goods traffic, and specialised wagons of several types for particular traffic, such as cement, pulpwood, explosives, and motorcars. One hundred covered wagons are being fitted with passenger type bogies that will enable them to be operated at speeds of up to 70 m.p.h.

Many other capital, renewal and replacement works are planned at various locations in metropolitan and country districts for the improvement of rail services generally.

NEW ZEALAND

Reversion to Steam Haulage

To cope with the increased traffic on the Bay of Plenty lines, the Railways Department is to withdraw diesel locomotives from the line north of Whangarei in February. From that date Far North line trains will be steam-hauled. Diesel locomotives will continue to be used on the Auckland-Whangarei section. The changeover from steam to diesel took place in the north two years ago. The diesel locomotives taken off the Far North Line will be transferred immediately to the Bay of Plenty line to deal with the extra traffic.

Farmers living alongside the railway are concerned at the danger of grass fires which may result from reversion to steam traction. At a meeting of the local division of Federated Farmers it was stated that farms along the line had been free from grass fires since replacement of steam by diesel traction.

FRANCE

Electrification South of Lyons

Although usually referred to as the Lyons-Valence electrification, the recent 1,500 V. d.c. conversion on the S.N.C.F. extends, in fact, from Chasse to a point immediately north of Lorient Station. The Lyons-Chasse section was electrified in 1952 as part of the original Paris-Lyons scheme so that perishables traffic from the Chasse yards could be worked by electric locomotives, and on January 18, this year, the Chasse-St. Etienne branch was electrified.

By extending the present electrification south of Valence, electric trains can run to and from the marshalling yard at Portes-les-Valence, as well as to Livron, the junction for Briançon. At Portes-les-Valence the sidings have been

extended so that trains of the maximum lengths handled at other modernised yards with which through traffic is exchanged can be received and made up with fewer shunting operations than were necessary before. The length of the reception sidings is now 820 yd.; 12 of the marshalling sidings are 875 yd. long, and 16 are 656 yd. long.

With the winter timetable, the working of 22 passenger trains with electric traction between Paris and Valence began, in some cases without change of locomotive. As more of the latest series of Bo-Bo locomotives become available a growing number of goods and parcels trains will be electrically-hauled to and from Portes-les-Valence. The station facilities at Valence itself are not well-suited to changing locomotives on a large scale and it is likely that some of this work will be shared by Livron. The complete elimination of steam haulage probably must await the final stage of the Lyons-Avignon scheme, but it will not be long before Lyon-Mouche depot is all-electric and the diminishing number of steam turns still necessary is shared among the other sheds.

CZECHOSLOVAKIA

Diesel Locomotive Production

According to plans now being framed for the development of the State Railways, the volume of rail transport is due to rise by some 90 per cent by 1965, taking 1957 figures as a basis for comparison. Various engineering and locomotive and wagon works are preparing to execute orders to make this possible. One of the largest of these works, Strojexport, C.K.D. Sokolovo, will terminate production of their steam locomotive, "900 BS 200," at the beginning of next year and will start full scale production of diesel-hydraulic locomotives of more than 2,000 h.p.

IRELAND

Bray-Harcourt Street Closure

Coras Iompair Eireann is to close Harcourt Street Station, Dublin, and discontinue services from the station to Bray, Co. Wicklow, from the end of the year. The seven intermediate stations; Ranelagh, Milltown, Dundrum, Stillorgan, Foxrock, Carrickmines, and Shankill, will also be closed.

After Shankill the line joins the main line to Bray at Shanganagh Junction which will remain open. The Harcourt Street building and lands will be sold. The annual loss on the Harcourt Street-Bray line is £53,000, and the estimated saving from the withdrawal of the service, and after providing for the cost of a substitute service will be £47,000.

Test Site for Wagon Buffing and Drawgear

Service conditions simulated

WHAT is claimed to be the first self-contained, fully-instrumented site in Great Britain for development work on, and testing of, wagon buffing and drawgear has been established at Ashchurch, near Tewkesbury, Gloucestershire, by Dowty Hydraulic Units Limited. It provides facilities for simulating most conditions likely to be encountered in service.

Standard-gauge track is used throughout and sharp curves down to as little as 1-ch. radius are incorporated, besides a run of straight track for speed testing. British Railways standard 16-ton capacity mineral wagons are used for normal operating tests, though all standard types or rolling stock can be accommodated.

Ramp Layout

Impact testing is carried out on two identical ramps built in-line. Each is equipped with dual track where all operating conditions for analysing a buffer's shock absorption characteristics can be reproduced. The second track is isolated from the first and is used for endurance and destruction testing. The ramps are positioned about 160 ft. apart and slope at angles of 15 deg. Impact speeds in excess of 25 m.p.h. are possible, more than three times greater than the current average shunting speed. Adjustable scotches, which slide on a light section rail, are used to hold

wagons on the ramps by their axles and impact speeds in increments of one m.p.h. are determined by manually positioning the scotches. Winches operated by Dowty hydraulic motors with a total of approximately 70 h.p., and hawsers are used for hauling wagons over the scotches. Release is effected by hydraulic ram control of an over-centre toggle for withdrawing the scotch. Wagons with gross laden weights up to 40 tons can be used on the ramps. Maximum hydraulic circuit working pressure achieved by the boost pump is approximately 1,500 lb. per sq. in. All operations are controlled from a console on the upper floor of the observation room situated alongside the track between the ramps, where the power units are housed.

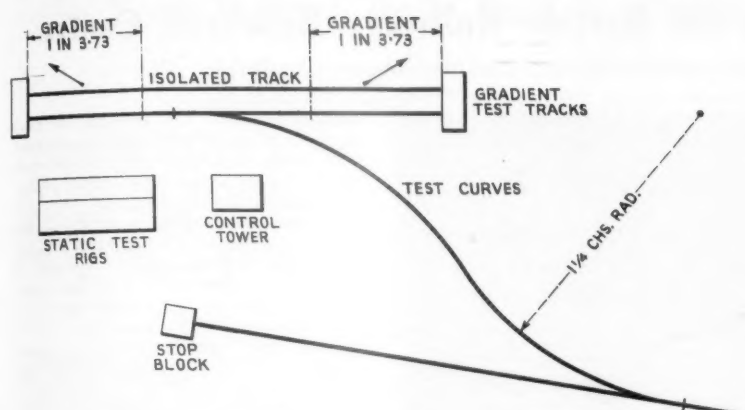
Buffer Impact Testing

By electronic recording of three basic essentials it is possible to compile a complete buffer performance analysis. A strain gauge pressure pick-up is screwed into the end wall of the buffer pressure chamber to measure reaction variation on impact. This pick-up is a small cylinder on to which a strain gauge is wound; as the cylinder dilates under pressure the resistance of the gauge increases. The gauge is calibrated before the tests to determine the relationship between pressure and resistance. The strain gauge forms part

of a Wheatstone bridge circuit. Voltage changes produced during an impact are fed into a d.c. amplifier and then into a driver amplifier of the first channel of a three-channel cathode ray oscilloscope set. The beam movement caused by changes in pressure is calibrated by switching a fixed resistance into the bridge. The second channel of the C.R.O. set records wagon motion. A potentiometer, in which the sliding contact is fastened to a probe, is mounted so that the probe contacts the wagon 6 in. before the buffers meet. As the buffers touch, the sliding contact is arranged to coincide on the potentiometer winding with a fixed contact which changes the polarity of the voltage after the slider has moved past this point. The time scale of these two traces is obtained by feeding signals at one two-hundredth of a second intervals from a fork-controlled oscillator into the third C.R. channel and recording the pulses simultaneously with the signals from the other two channels. All three traces are recorded photographically. From this information, the following data can be calculated: (a) wagon impact velocity; (b) deceleration rate of wagon; (c) force reaction at buffer on impact and during deceleration; (d) buffer shock absorption capacity; (e) energy destruction efficiency of buffer; (f) buffer stresses; (g) kinetic energy of wagon. By using



General view of testing site, showing 1 in 3.7 gradients, 1¼-ch. curve, static test rigs, and control tower



Layout, showing locations of test curves and control tower in relation to track

additional strain gauges, stresses in various parts of the wagon frame and the effect of load movement during impact are also analysed.

70-Ton Buffer Block

At the end of the straight track there is a 70-ton fixed buffer block, used, among other things, for the standard British Railways inspection test for buffer head strength. Buffers are mounted on the block at an angle of 30 deg. and are impacted by a buffer plate attached to the wagon. Impact speeds up to 17 m.p.h. are attainable. High speed cameras show that during impact tests with a 40-ton laden wagon the block moves $1\frac{1}{2}$ in. and then gradually returns to its original position.

By way of contrast and to show the shunting limitations imposed by normal spring-buffer design, a lightly-laden standard 13-ton capacity wagon moving at only 14 m.p.h. on level track is severely damaged when the buffers close up on making contact with a fixed stop block.

Automatic Coupler Development

The object of coupler testing on the ramps is to prove the geometry of the design and the strength of the materials under accelerated endurance shunting conditions. Instrumentation is used to record the efficiency of the automatic vacuum braking connection incorporated in the coupler. Typical working conditions are simulated by a converted well-wagon fitted with adjustable headstock allowing the coupler and buffer to be off-set in both vertical and horizontal planes, impacted at 10 m.p.h. by a 16-ton mineral wagon to test correct functioning of the coupling after which the release gear is also tested.

Gathering and coupling tests are undertaken on the special section of track which has been laid down to reproduce simultaneously the very severe curvature conditions occurring in even the most remote private siding, and a comprehensive range of vertical and horizontal misalignment. On page 572 of our November 7 issue were illustrations of the finally developed Dowty

automatic wagon coupler during tests under these extreme conditions.

Static Test Rigs

There are several specially designed hydraulically actuated test rigs with full instrumentation. On this static site, both hydraulic buffers and automatic couplings for goods wagons are separately tested under conditions which are simulated from close-up ciné films specially made of coupling and buffer movements experienced during normal service on conventionally equipped goods trains running at speeds up to 65 m.p.h. These movements are faithfully reproduced for endurance and fatigue testing.

On one rig buffers are subjected to a rapid cycling test to establish the rate of buffer head wear. Another tests the efficiency of the sealing arrangement. The rig automatically cycles at 40 full closures per min. Buffers undergo this test in batches of six, so that test figures

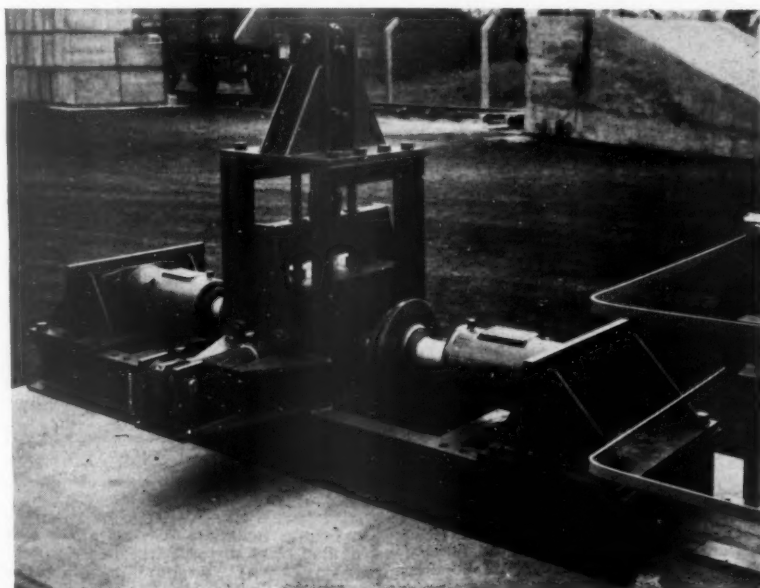
are compiled from a factual average. So far it has been established that after 200,000 complete cycles about one pint of oil is lost. In terms of railway usage this means that a buffer will require oil replenishment once in every five years.

Couplers are placed in a draft simulation rig which rapidly varies the misalignment whilst maintaining a heavy drawbar pull. This rig subjects the coupler to far worse conditions than would be encountered on any existing service track. Aided by enclosure of the rig, dust, sand, and water can be injected in turn at varying intervals and freezing conditions can also be created. Instruments indicate the degrees of misalignment, drawbar pull, and vacuum connection efficiency.

Throughout the test rigs, standard Dowty control units are used in combination to produce all the misalignment conditions required at irregular intervals and at varying speeds.

RAILWAY BENEVOLENT INSTITUTION.—At a meeting on November 17 the board of the Railway Benevolent Institution granted annuities to four widows and four members involving an additional liability of £165 a year; 87 gratuities were also granted amounting to £825 to meet cases of immediate necessity. Grants made from the Casualty Fund during the month of October amounted to £1,409.

CHANNEL TUNNEL STUDY GROUP PROGRESS REPORT.—The Channel Tunnel Study Group, constituted at the end of 1957 and composed of representatives of the English and French Channel Tunnel Companies and other interested bodies, has issued a progress report. This states that geophysical investigations with the help of recently developed techniques do not reveal any insuperable obstacle to the construction of the tunnel. Surveys of goods and passenger traffic also are in progress.



Test rig for measuring buffer head wear. Note 70-ton buffer block in background

Electronic Computer for British Railways Research Centre

Speedy solution of railway calculations



Electronic digital computer at Derby, with two doors removed, showing plug-in units

THE Research Department of British Railways at Derby is frequently faced with problems involving complex mathematical analysis. Calculations relating to structural stresses, tractive effort, bridge design, traffic delays, and so on call for such analysis. To solve the resultant formulae, the Physics Division, at Derby, has installed an Elliott 402F electronic digital computer. It is one of only two of its kind in Europe. The other is in Germany.

A general-purpose, automatic, floating-point, binary computer, it is designed, primarily, to deal with scientific and engineering problems in which the mathematics are too complex to be performed by the usual desk-type machines.

The computer consists of an assembly of nine individually ventilated cabinets, containing a total of 400 standard plug-in units, a magnetic drum-store, stabilised power supplies and a built-in

control console. The cabinets are constructed of stove-enamelled duralumin, with doors back and front. A five-hole punched-paper input tape is read photo-electrically at speeds up to 180 characters per second. A similar output tape, punched at 25-33 characters per second, is subsequently interpreted at 10 characters per sec. The computer, which weighs 31 cwt., measures 16 ft. 10 in. long by 3 ft. 8 in. wide by 6 ft. 9 in. high. The power requirement is 11 kVA, 415 V, 50 c/s, three phase with neutral and earth.

The equipment can store and perform operations on over 4,000 numbers simultaneously. The floating point feature is an additional asset which permits greater accuracy in a larger range of numbers. The speed of the computer is such that a pair of numbers, each of nine digits, can be multiplied at the rate of 300 in one second.

Applications

It is intended that numerical calculations will be made on vibration problems, including those concerned with the improvement of passenger coach comfort, analysis of stresses in structures, and problems relating to the development of continuous braking for freight trains. Other uses envisaged include the determination of optimum conditions, where many variable factors are concerned; for example the most economical way of carrying out a complex set of wagon movements. The approximate cost of the equipment is stated to be £40,000. It was installed in June, and handed over by the manufacturer, Elliott Bros. (London) Ltd., Scientific Computing Division, Borehamwood, Herts., to the Research Department in July.

AMENITIES BLOCK AT SALTLEY DEPOT.—Amenity buildings for the 1,200 enginemen at Saltley, near Birmingham, London Midland Region, were opened by Mr. David Blee, General Manager of the Region, on November 14. Those present at the ceremony included Mr. E. W. Arkle, Director of Traffic Services; Mr. J. Taylor Thompson, Chief Civil Engineer, and Mr. W. R. Hoadley, Regional Architect, who designed the buildings; Mr. E. H. Baker, Motive Power Officer; and Mr. E. A. Talbot the District Motive Power Superintendent, Saltley. Construction is a steel framework with brick end walls and pre-fabricated timber panels infilled with glass. They consist of single- and double-storey blocks with two messrooms, bathing facilities, locker and drying rooms, offices, and control centres. The Saltley project is intended to provide a test as to the future requirements for staff buildings. Materials used and certain elements in construction are experimental as regards weather resistance, wear and tear, and costs are concerned. The method adopted is designed to increase speed of erection and lower constructional costs. The heating and ventilation system is a combined

plenum system, which gives complete mechanical ventilation, summer and winter. Boilers are oil-fired. The small traffic control office is designed so that the Yard Controller has a wide field of vision over the yard. There is a loud hailer system for instructing drivers of locomotives. The mess-room caters for a peak user of 168 and has been divided by a sliding partition so that cleaning can take place in one section while the other section is in use.

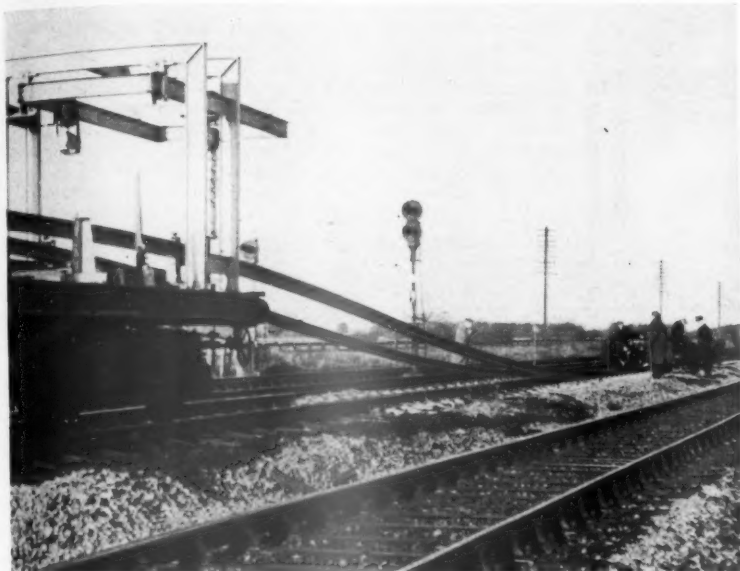
DEVELOPMENTS IN BRAZILIAN RAILWAY INDUSTRIES.—Companhia de Material Ferroviário Cobrasma has received two Export-Import Bank loans to expand production. The company holds licences from several American firms, including the Budd Company, of Philadelphia, to manufacture its rolling stock and other equipment. It is at present building stainless-steel passenger cars, exporting couplers and other material to Argentina, and installing plant to forge wheels, axles, and so on. The wagon manufacturer, Sorocabana de Material Ferroviário, associated with General American Transpor-

tation Corporation, of Chicago, specialises in tank and refrigerator wagons. It has recently developed new business in leasing, instead of selling, its wagons to bulk transport companies and has installed several maintenance shops in South Brazil to repair its own rolling stocks and that of the railways.

EXPORT CREDITS FOR ENGINEERING SHIPMENTS.—The Export Credits Guarantee Department has simplified its arrangements for cover on engineering exports sold on credit terms of from six months to three years. For engineering products not classed as capital goods, such as diesel generating sets and earth-moving equipment, the Department no longer examines each transaction. Exporters are now given a broad authority within their E.C.G.D. policy to name their own terms for credit up to two years where orders are £20,000 or more for either commercial credit users such as distributors or for end-user buyers. There will be no objection to terms up to three years maximum for orders of £50,000 or more for end-user buyers. Approval must be obtained when there are special grounds for going beyond these periods.

Long-Welded Rails Laid in Continuous Operation

Method adopted by North Eastern Region allows one track-mile to be laid in 600-ft. lengths in one continuous operation



Rear end of train of 11 "Salmon" type bolster wagons conveying 36 welded rails each 300-ft. long, fishplated into 600-ft. lengths; pair of rails being drawn off for laying

THE Chief Civil Engineer's Department of British Railways, North Eastern Region, has devised and adopted a method of laying long-welded rails. Such rails up to 300 ft. are already in use in a number of places. Until quite recently the method used in Britain has been to unload them from the carrying wagons on to the permanent way and then to manhandle them into their seatings. With the new method it is possible to lay in approximately one track-mile of long-welded rails in one continuous operation.

Unloading from Rear of Train

A train of 11 "Salmon" type bolster wagons, with a total length of about 700 ft., is used. Up to 36 welded rails, 300 ft. long, can be loaded on to the bolster wagons at the new rail welding depot at Dinsdale, near Darlington, described in last week's issue. Pairs of these rails are fishplated together to form 600-ft. lengths. Eventually continuous welded rails 600 ft. long will be available. The rear wagon of the train has special gantry equipment designed for guiding the lengths of rail off the wagons at normal rail spacing of 4 ft. 8½ in. and for lowering the rail ends.

Before starting laying-in operations, the rail ends are anchored to the track by 60-ft. steel wire ropes. The 11 wagons are drawn forward by a 350-h.p. diesel-electric shunting locomotive until the first 70 ft. of each pair of rails is clear, and the ends of each

length have been deflected down to the level of the rail in the track. During this part of the operation the first pair of existing short rails is tipped out manually from its sleeper seatings. The train is brought to a stand and the ends of the long rails are put into

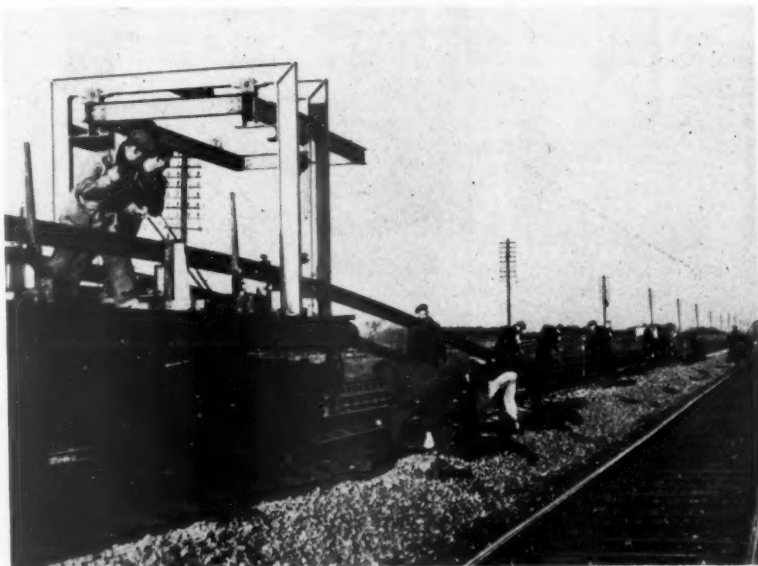
position in the vacant sleeper seatings. The ends of the long rails are then fishplated to the existing track and the wire ropes removed.

Thereafter the train is kept moving at a constant speed of about 30 ft. a min. The short rails are tipped out in pairs as the rear wheels of the last wagon move clear, and the 600-ft. rails are guided into their sleeper seatings by men using bars. When the free ends of the first pair of 600-ft. rails have reached a position on the wagon next to the gantry wagon, the train is stopped and the rails are fishplated to the second pair of 600-ft. lengths. This cycle of operations continues until the last pair of rails is being drawn off.

When only 2 ft. or 3 ft. of long-welded rail remains to come through the last pair of rollers the train is stopped and the rail ends lifted just clear of the bottom rollers by chain-lifting blocks suspended from a lowering gantry. The train then moves forward a few feet and when it is stationary the rail ends are lowered into their sleeper seatings.

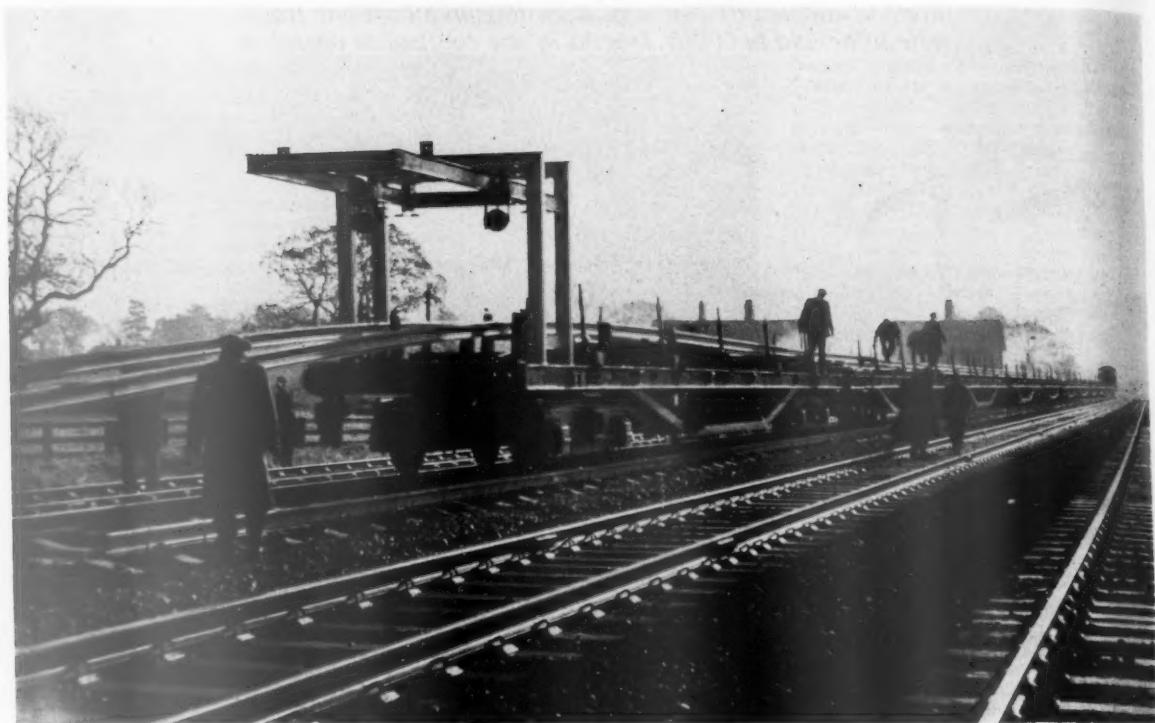
Portable telephone equipment is used for communication between the engine and the gantry wagon of the train.

This method of installing long-welded rails was used on the East Coast Main Line between Beningbrough and Toller-ton on November 13. The section was laid with 109-lb. F.B. rail on concrete sleepers, with "A.D." type fastenings. So far as can be ascertained this was the first time that this method of laying long-welded rails has been adopted

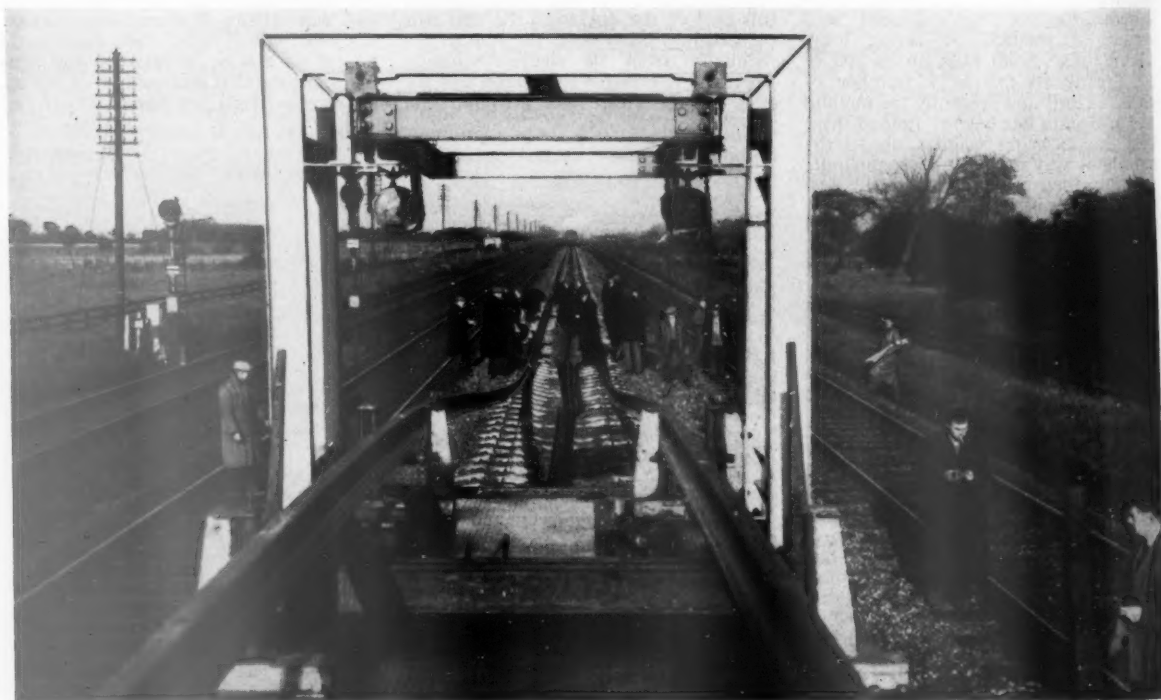


New long-welded lengths being lowered into sleeper seatings, and existing short rails being tipped out by hand

Long-Welded Rails Laid in Continuous Operation



Pairs of 300-ft. rails fishplated into 600-ft. lengths being drawn off 700-ft. long train of 11 "Salmon" type bolster wagons



Rear bolster wagon, showing equipment for guiding rails at 4-ft. 8½-in. spacing into their sleeper seatings, and gantry equipment for lowering the ends of the rails when the operation is completed

ELECTRIC RAILWAY TRACTION SECTION

Electrification Economies in New South Wales

COMPLETION this summer of the first year of electric working on the New South Wales Government Railway between Sydney and Lithgow made this scheme an appropriate subject for one of the papers in the Transport section of the recent World Power Conference meeting in Montreal. The author, Mr. R. W. J. Mackay, Senior Administrator, Department of Railways, described the conditions which led to the decision to electrify this difficult route, which in climbing to its summit in the Blue Mountains rises for over 11½ miles at 1 in 60, and follows this with over 20 miles averaging 1 in 48, but much of it at 1 in 33, with many curves the whole way of 12 and 14 ft. ch. radius. When estimates of rising coal production in the Western coalfield foreshadowed saturation of traffic capacity with steam working, locomotives were already spending half of the time out of depots standing in sidings to allow faster trains to pass. Widening would have been very costly, and might have been possible in places only by following new locations, the present route being hemmed in by settlement and the main road. A study was made of diesel traction, but with the standard locomotives available the payload which could be hauled at 35 m.p.h. up the steepest gradients would have been about equal only to the locomotive weight. A comparison of tractive efforts at this speed on the 1 in 33 gradient is given in the paper and shows that 7,000 lb. (or 14,000 lb. with two units) would be available with the diesels, while an electric locomotive of the type specified would exert some 28,000 lb. It was decided accordingly that operation of the line by electric locomotives and multiple-unit sets was the most satisfactory solution to the problem. This would double the track capacity compared with steam working and result in considerable operational economies.

Although the line is an extension of the existing 1,500 V. d.c. suburban system, the possibility of using a.c. was not excluded. From the overall cost point of view there was little to choose between 1,500 V. or 3,000 V. d.c. and 25 kV., 50-cycle a.c., and either the higher d.c. voltage or a.c. would have been more attractive from the electrical point of view. The decision to continue with 1,500 V. d.c. was governed by the problems that would have arisen at the changeover point had a different system been chosen, and by clearance difficulties in 11 tunnels. As it was, the design of overhead supports in the tunnels had to be adapted specially to minimise cutting into the brick lining, as the tunnels had been built between 1910 and 1913. It is clear from Mr. Mackay's paper that considerable economic advantage was expected from regeneration by trains descending the lengthy gradients. This would have been difficult to obtain with a 50-cycle system using rectifier locomotives, and the heavy haulage at low speeds on such a route would not favour use of 50-cycle traction motors.

Provision for absorbing excess regenerated power has been made by means of substation resistors with high-speed electronic switching. The regenerative arrangements in the locomotives supplied for this section by the Metropolitan-Vickers Electrical Co. Ltd., were described in our issue of February 14, 1958, and it is now stated that thought is being given to the introduction of regenerative braking in the stainless steel multiple-unit trains of the type now being delivered, and illustrated in our October 24 issue. It is estimated that in full traffic conditions up to 20 per cent savings in the energy used will be achieved by the regenerative system. For the most part there is plenty of traffic on the ascending line to absorb that fed back into the overhead system by descending trains, and experience has shown that little regenerated energy has been wasted in resistors at substations. An approximate calculation suggests that about 0.086 lb. of coal is burned at the power stations per gross-ton-mile of electrified traffic (making no allowance for regeneration), and this compares with nearly

0.355 lb. per gross-ton-mile consumed in steam locomotives at the time of electrification. With present traffic levels the direct saving in fuel alone on the electrified line accounts for over 150,000 tons of fuel a year. When these benefits are combined with others such as an acceleration of 36 min. in the journey time by passenger train over the 79 miles to Mount Victoria, the true significance of railway modernisation can be readily appreciated.

Dutch Electrification Jubilee

THE first section of main-line railway in the Netherlands to be electrically operated was that between Rotterdam, The Hague, and Scheveningen, South Holland Electric Railway opened in the autumn of 1908. The then Holland Railway, fearing competition with its own Rotterdam-Hague route through Delft, obtained a controlling interest in the new concern which, however, continued as a separate corporate body until its liquidation in 1923. A result of this was the placing of the new station at The Hague near that of the Holland Railway instead of that of the company then operating the State lines, as at first intended, and the adoption of the 10,000-V. 25 cycle a.c. system with overhead conductors and rolling stock of main-line type capable of speeds up to 60 m.p.h. A power station was erected at Leidschendam generating three-phase current, delivered by Scott-connected transformers as two phases, one each side of a selected dividing point. The electrical equipment was by Siemens-Schuckert, with series motors.

The success of the line led the controlling company in 1918 to consider electrifying its own heavily loaded Amsterdam-Rotterdam line. By this time the systems of the two large main-line companies, which already had absorbed some smaller ones, were operated together under a working agreement, leading to nationalisation in 1938.

This necessitated study of electrification from the broadest possible point of view and adoption of methods of general application. A committee reported in favour of the 1,500-V. d.c. system with overhead conductor. It was decided not to build separate railway power stations but to take current from the general public supply undertakings. The South Holland line was itself converted to d.c. operation in 1926.

An experimental d.c. section was equipped in 1923 between The Hague and Leyden, with rotary sub-station machinery; it was later decided to use rectifier equipment as standard and in 1927 electric operation began on the Haarlem-IJmuiden and Amsterdam-Rotterdam lines and proved very popular. The cost of current for a time retarded further progress; but in 1931 the Amsterdam-Alkmaar and Uitgeest-Velsen lines were electrified and in 1934-1935 others completing connections to the original routes, when improved streamline stock was introduced. The lines in the centre of the country had been provided with diesel services but an attractive offer for current from the local power supply undertakings led to a decision to electrify. The work was largely completed by 1938. A few sections were added early in the war, during which motor coaches were used to haul goods trains. Great damage and loss of equipment was suffered but made good again by 1948, while some further sections were then converted, after which progress was continuous. Electric locomotives were introduced for goods and international passenger trains. Since 1948 some 621 miles of route have been electrified. The electrified route mileage of the Netherlands Railways is 984, out of a total of 2,000, the second highest percentage of electrified mileage in Europe, after Switzerland. A remarkable feature of electric working in the Netherlands, apart from punctuality, is the dual-voltage multiple-unit trains working between Amsterdam, Rotterdam, Antwerp, and Brussels over the 3,000-V. d.c. Belgian National lines.

New Bogies for Moscow Underground Vehicles—2*

Unusual features in Type "D" cars include fabricated construction from pressed sections

(By a correspondent)

THERE are four brake cylinders for each bogie. With an air pressure of 38.4 lb. per sq. in., with the vehicle empty, and 52.5 lb. per sq. in. when laden and allowing an opposing force of 180 lb. due to the piston spring at a stroke of 50 mm., the force at each cylinder will be 900 lb. and 1,280 lb., respectively. Account must be taken of the action of the brake gear leaf springs, each of which produces a force of about 145 lb. with worn blocks and a force of about 170 lb. due to the helical springs. The ultimate total pressure of the brake blocks amounts to 19.5 and 28.5 tons with the vehicle empty and laden, respectively. The coefficient of adhesion which can be maintained in service will be of the order of 0.108 to 0.187 when empty and 0.109 to 0.19 when fully laden, respec-

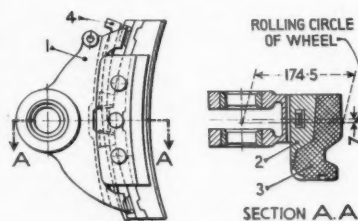


Fig. 6—Brake block with plastic insert

tional masses amounts to about 10 per cent of the vehicle weight. The resultant calculated retardation from 37 m.p.h. for the empty vehicle is 2.3 to 3.9 m.p.h. per sec. for the empty, and 2.45 to 4 m.p.h. per sec. for the fully laden vehicle, respectively. However, these values do not allow for the time

ten days use is now made of plastic blocks (Fig. 6). With these the block, 3,

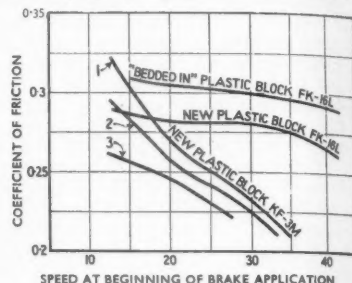


Fig. 7—Values of brake block friction: Curve (1) sand and 170 lb. per sq. in. pressure; (2) sand and 214 lb. per sq. in. pressure; (3) no sand and 66 lb. per sq. in.

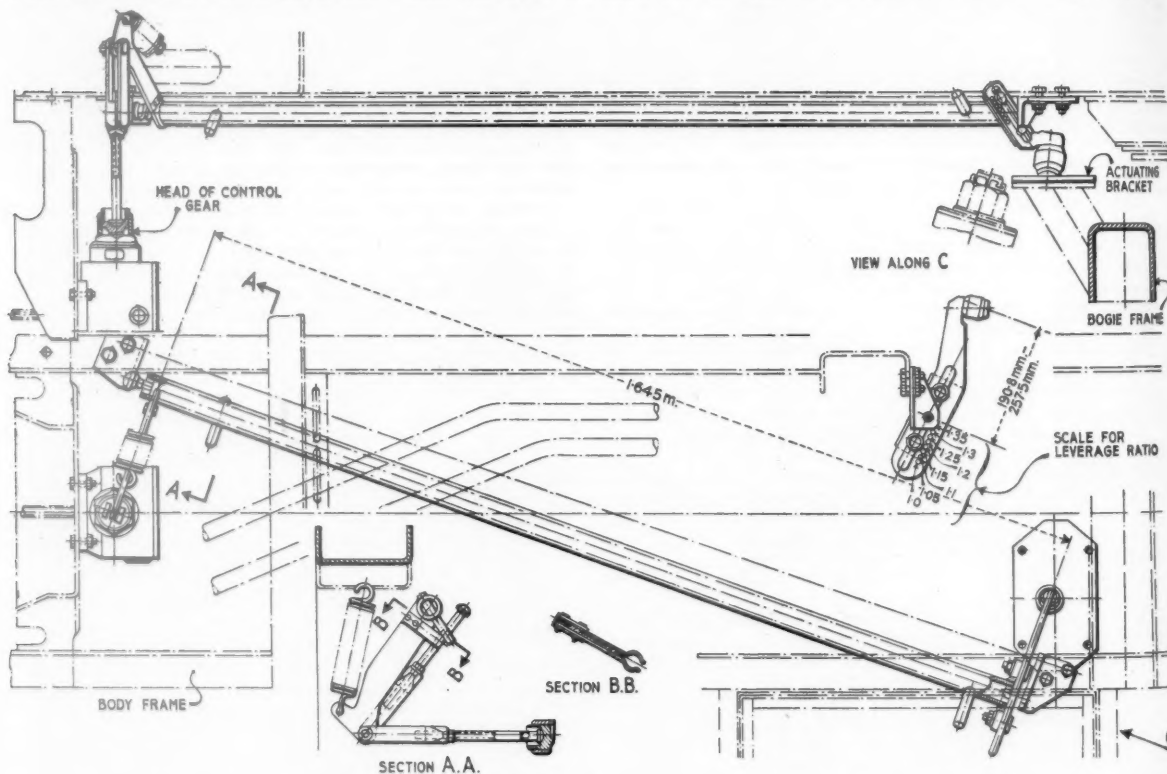


Fig. 8—Rigging between body underframe and body, for automatic adjustment of acceleration and retardation

tively, and here it should be mentioned that with the vehicles concerned the weight transfer can be as high as 15 per cent.

Furthermore the effect of the rota-

required to build up air pressure in the cylinders for the change in brake block friction values as a function of speed³ and sq on.

As on other railways, cast iron brake blocks were originally used, but since these had to be replaced every seven to

is pressed into a steel block holder, 2. The worn block is removed by chisel and burning off in an oven and the holder used for replacements. However, these blocks are as yet not considered as entirely satisfactory, although they remain in service up to three

* Part I appeared in our issue of September 26

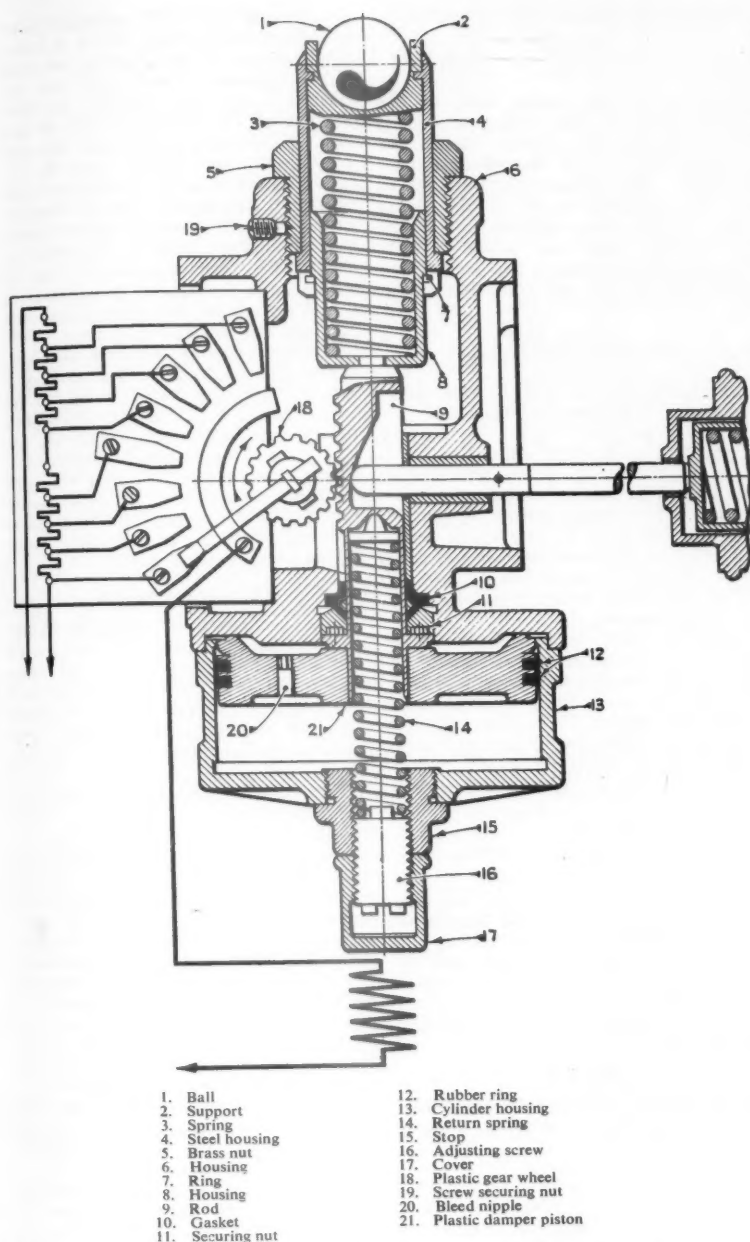


Fig. 9—Automatic acceleration and retardation control

months. This is due to wide variation in the values of the coefficient of friction (Fig. 7) and due to thermal cracks in the tyres caused by reduced areas of heat transfer.

The hand brake applies only to eight brake blocks on the left-hand side of the vehicle. To achieve a brake block pressure of 19.5 and 28.5 tons as required for full brake application for the empty and laden vehicle, respectively, the required force at the hand brake wheel will be about 50 and 70 lb., respectively. The number of turns at the hand-wheel required for brake

application is about 18-20.

Because of the wide range of loads and the consequent variation of vehicle weight between 36.2 and 56 tons, it is desirable to ensure an automatic adjustment of acceleration and retardation; these should be kept reasonably constant, bearing in mind the nature of the service. This requirement is met by adjusting the acceleration and braking in accordance with bolster spring deflection, the gear concerned being

shown in Fig. 8. The tubular shaft, 1, located between the bogie and body underframe, is carried in ball bearings, 2, by stubs, 3, extended from the brackets, 4. The front end lever, 5, is welded to the shaft whilst the rear lever, 6, is secured to flange 8, with the aid of the bolts, 7.

As shown on the upper elevation, this lever is slotted, this enabling to adjust the leverage within a range of 1 to 1.35, the lever being graduated in steps of 0.05. Lever 5 is provided with a push rod, 9 and 10, which operates the acceleration and brake control mechanism. The lever is returned by the spring, 11, and the assembly can be secured in an off position by the clamp, 12. The shaft, 1, is provided with two pegs, 13, which can be used to turn the shaft and actuate the control mechanism. Once adjusted the operating lever is locked by the nut, 14. With increasing loads the bolster springs will compress, this moving lever, 6, upwards and 5 downwards, in turn moving the push rod, 10, which will operate the control mechanism (Fig. 9). Here the push rod bears on a shaft which when moved downwards will, by its oblique surface, push the brake control rod to the right, this in turn increasing the air pressure admitted to the brake cylinders. It also operates a gearwheel, this actuates a contact arm moving over nine contacts, which adjust the setting of the relay controlling acceleration and dynamic braking.

Vibration

In the past the suspension system was usually designed on the basis of previous experience. This practice, laudable as it was, did not always lead to satisfactory solutions, particularly when faced with novel designs resulting from changes in operating requirements. This was also the case when design considerations were influenced by the desire to use springs already held in stock for vastly different applications. When faced with a new design it is essential to consider very carefully the various modes of oscillations, their natural frequencies, the interaction of the various modes and the likelihood of the natural frequencies being encountered at operationally important speeds.

Against the background of the available design data it should be easy to determine the various fundamental modes of vibration of the vehicle and thus ascertain the main natural frequencies and the road speeds at which these vibrations are likely to be encountered.

The oscillations concerned are bouncing, pitching, hunting, and swaying, and they will be briefly considered along the lines suggested in greater detail elsewhere². The natural frequencies of the body bouncing on the suspension is given by:—

$$f_{1,2} = \frac{30}{\pi} \sqrt{\left(\frac{c_1 + c_2}{2m_1} + \frac{c_2}{m_2} \right) \pm \sqrt{\left(\frac{c_1 - c_2}{2m_1} + \frac{c_2}{m_2} \right)^2 - \frac{2c_1c_2}{m_1m_2}}} \text{ [cycles/min.]}$$

where c_1 and c_2 are the spring rates of the primary and secondary suspension of one bogie, respectively, m_1 is the sprung mass of one bogie and m_2 the mass of the body. Here $c_1 = (12/1.625) \times 13 \times 2240 = 216,000$ lb./ft., $c_2 = (12/1.812)7.05 \times 2240 = 105,000$ lb./ft., $m_1 = 6 \times 2240/32.2 = 418$ lb. sec.²/ft. whilst $m_2 = 1.4 \times 2240/32.2 = 975$ lb. sec.²/ft. for the empty and $m_2 = 33.8 \times 2240/32.2 = 2360$ lb. sec.²/ft. for the laden vehicle, respectively. With these values the two natural frequencies of bouncing will be $f_{1e} = 152$ cycles/min. and $f_{2e} = 244$ cycles/min., for the empty and $f_{1l} = 77$ cycles/min. and $f_{2l} = 255$ cycles/min. for the fully laden vehicle, respectively.

The lower frequency of the empty and laden vehicle is somewhat on the high side since generally comfortable riding qualities require f_1 not to exceed about 90 cycles/min.; this value is attained only with the vehicle almost fully laden. However, the above values are common with vehicles used for this type of service where speeds are relatively low and the travelling times short. The second resonance speed f_2 is outside the operating range of the vehicle and in any case it is of small account, since it is usually effectively suppressed by the damping present in the suspension.

Similarly the natural frequencies of pitching oscillations are obtained from:

$$f_{3,4} = \frac{30}{\pi} \sqrt{\left(\frac{c_1 + c_2}{2m_1} + \frac{a^2 c_2}{I_y} \right) \pm \sqrt{\left(\frac{c_1 + c_2}{2m_1} + \frac{a^2 c_2}{I_y} \right)^2 - \frac{2a^2 c_1 c_2}{m_1 I_y}}} \text{ [cycles/min.]}$$

where $2a$ is the distance between the bogie centres and I_y the moment of inertia of the body about the lateral axis through the centre of gravity. Here $2a = 413$ ft. whilst $I_y = m_2 \times (0.25L)^2$, where L is the vehicle length so that $I_y = 975 \times (0.25 \times 61.583)^2 = 203,000$ lb. ft. sec.² for the empty and 560,000 lb. ft. sec.² for the laden vehicle, respectively.

The resultant frequencies will be $f_{3e} = 154$ cycles/min. and $f_{4e} = 282$ cycles/min. for the empty and $f_{3l} = 101$ cycles/min. and $f_{4l} = 260$ for the fully laden vehicle, respectively. Here too unduly high amplitudes of f_1 can be readily suppressed by even relatively low damping forces, but in any case these frequencies are too high to be encountered in the operating range of the service concerned. Pitching is more important than pure bouncing which is rarely encountered in service, and here again for main line passenger service the lower natural frequency should not exceed about 90 cycles/min. The value of 154 is on the high side, being, however, of the same order as that encountered with more recent M.U. vehicles in some West European suburban services.

Hunting

The frequency of hunting of the body, coupled with a simultaneous

lateral displacement, is given by:—

$$f_b = \frac{30a}{\pi} \sqrt{\frac{c_y}{I_z}} \text{ [cycles/min.]}$$

where c_y is the lateral rate of the swing links of both bogies and I_z is the moment of inertia about the vertical axis. For the present case $I_z = I_y$. The value of c_y will depend on the effective length of the swing links which with inclined links will be shorter than the actual length. The effective length, r , can be derived with the aid of the following equation:—

$$r = \frac{a(al - 2bh)^2}{l^2 f^2 - 2b^2 l - 4ab^2 h}$$

The significance of the various parameters is illustrated in Fig. 10.

Here $f = 16.25$ in., $l = 59$ in., $b = 2$ in., $a = 16.15$ in. Since the floor height, body width and height are somewhat similar to that of a standard coaches whose centre of gravity is about 5.5 to 6 ft. above rail level, the relevant distance here is assumed to be 5.5 ft. so that $h = 4.25$ ft. = 51 in. with these values $r = 10$ in. for the empty vehicle.

With the fully laden vehicle allowance must be made for the centre of gravity of seated passengers which is some 25 in. above floor level as compared with about 40 in. for standing passengers. This results in the centre of gravity of the fully laden vehicle being some 10 in. higher than when

elusive and yet very important mode of vehicle oscillations, which is lateral displacement of the body on the swing links combined with roll on the springs. As this motion has two degrees of freedom there will be also two natural frequencies and two axes of rotation, one usually near the rail level and the other about the head level of sitting passengers. On the basis of simplifying assumptions the two swaying frequencies can be determined in accordance with the equations, Fig. 11, where i_c is the radius of gyration of the body about the longitudinal axis through the centre of gravity. Here the value of i_c is assumed to 4.2 ft. whilst I_z is 2.5 ft. The value of s will in this case be 4.15 ft. for the empty and 3.3 ft. for the fully laden vehicle, respectively, whilst $h_2 = 5.33$ ft. The resultant swaying frequencies are $f_{se} = 34$ cycles/min. and $f_{le} = 94$ cycles/min. for the empty and $f_{sl} = 23$ cycles/min. and $f_{ll} = 82.5$ cycles/min. for the fully laden vehicle, respectively.

Resonance Speeds

The road speeds at which the resonance speeds are likely to be excited will depend on rail length and upon the sinusoidal motion of the wheel sets and bogies. The rail length will affect pitching and bouncing, whilst bogie hunting will affect body hunting besides swaying.

With 60-ft. rails, excitation of vertical oscillations will be encountered every 60 ft. and also probably at 30 ft. intervals. As shown in Fig. 12, resonance with the natural frequency of bouncing will not be encountered with the vehicle empty, but when fully laden resonance is likely to occur at about 26 m.p.h., the resonance speed increasing with decreasing load. Similarly resonance with the natural frequency of pitching will be encountered at about 35 m.p.h. when fully laden, the resonance speed increasing with reduced load. These conditions apply for a two-degree of freedom system, i.e., both the primary and secondary suspensions contribute to the overall natural frequency of the system.

If, however, as is often the case, the leaf springs are heavily damped by friction so that when subjected to an impact they might oscillate for one or even only one half of a complete cycle before coming to rest, then the natural frequency of the system will be governed by the helical springs. The relevant frequencies are shown by dotted lines, and it will be noted that with the empty and fully laden vehicle resonance with the natural frequency of bouncing is likely to be encountered at 50 and 39 m.p.h., respectively, whilst for pitching the relevant speeds will be 57.5 and 39 m.p.h., respectively.

The hunting and swaying oscillations are mainly induced by the sinusoidal motion of the running gear; the frequency depends on wheel dia., tyre conicity and the distance between the

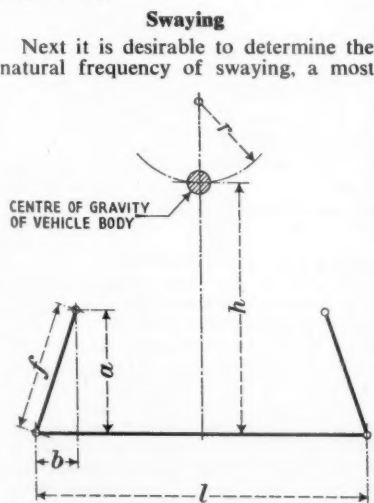


Fig. 10—The geometry of bolster swing links

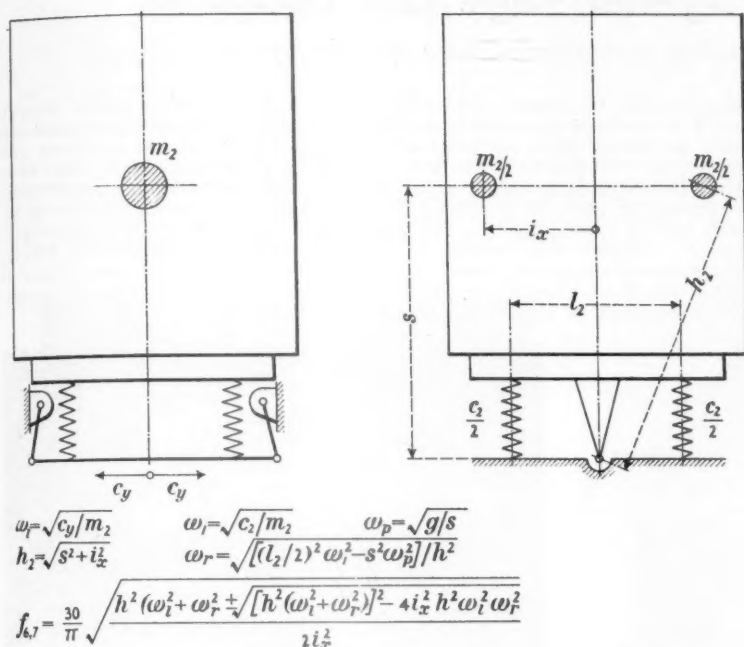


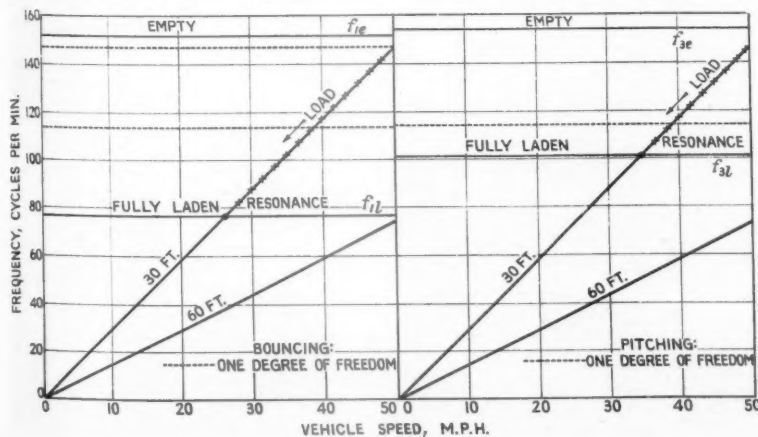
Fig. 11—Equations for determination of the natural frequencies of body swaying on the bolster suspension

rolling circles of the wheels (for Russian conditions this distance is 5 ft. 2½ in.), also whether the axles are free to pursue their own path or rigidly restrained in the bogie frame². The theoretical values of the lateral frequencies for either of these extreme conditions of running are plotted in Fig. 13, together with the values of natural frequencies of hunting and swaying of the empty and fully laden vehicle.

Extensive tests, however, have shown⁴ that, as might have been expected, the frequency of the sinusoidal path of the wheels down the track does not conform to either of these conditions, the actual frequencies approximately

following the thicker curves. These are also plotted for 1 in 20 (new) and 1 in 10 (worn) tyres since the vehicle should be expected to ride well with tyres worn to a reasonable extent, the wear referring to the ½-in. wide portion of the tyre adjoining the flange radius. It will be noted the resonance with the lower frequency of swaying will be encountered at speeds varying about 7-20 m.p.h., depending on load and tyre conicity.

With increasing tyre wear, however, resonance with the upper swaying and hunting frequencies will be encountered as well. For example with tyres worn down to 1 in 10 resonance with the hunting frequency is likely to be



Figs. 12 and 13—Natural frequencies (Fig. 12, left) of bouncing and pitching and the resonance speeds of 60-ft. rails; and (Fig. 13, right) of swaying and hunting and the resonance speeds of the vehicle

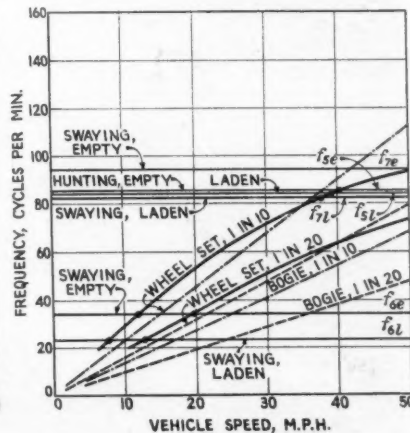
encountered at about 40 m.p.h., whilst resonance with the upper swaying frequency of the laden vehicle is likely to be encountered at about 38 m.p.h. These speeds will be reduced with further tyre wear, which will also excite the higher swaying resonance frequency of the empty vehicles. This condition is undesirable, as here both body hunting and swaying resonance will be met at operationally important speeds.

In addition hunting and swaying, of which the natural frequencies for the laden vehicle are rather close together, here are coupled via the motion along the lateral axis through the centre of gravity. Thus the pattern of oscillations, with the resonance conditions of bouncing and pitching, suggest that to prevent unduly high amplitudes which, with the relevant relatively high frequencies, will combine to produce somewhat poor riding qualities, it will be advisable to fit dampers across the primary springs to ensure an overall damping coefficient equivalent to about 0.2 to 0.25 of the critical damping value² (pitching and bouncing), and also to reduce the amplitudes of hunting and swaying oscillations.

In the latter case it might pay to install dampers at an angle between bolster and bogie frame rather than across the bolster springs to ensure a lateral damping coefficient equivalent to about 0.4 of the relevant critical damping, combined with a damping of the swaying as well as vertical oscillations. It might be also advisable to replace the bolster fore and aft check plates by rubber bushed links between bolster and bogie frame. This will reduce wear and prevent fore and aft oscillations from being imposed on the body.

REFERENCES

- ¹ "Fully Sprung Motors," *The Railway Gazette*, August 29, 1958.
- ² G. V. Fedorov, S. M. Misikov and D. V. Sergeev, "Rolling Stock for the Metropolitan," (in Russian), "Transzheldorizdat," Moscow, 1957.
- ³ J. L. Koffman, "Adhesion and Friction in Rail Traction," *Journal of the Inst. of Loco. Engineers*, Sept.-Oct., 1948.
- ⁴ J. L. Koffman, "Vibrational Aspects of Bogie Design," *Journal of the Inst. of Loco Engineers*, Vol. 47 (Part 6), 1957.



Track Re-laying with Single Line Occupation

End-on loading of rails in advance of re-laying

WHERE two line occupations for a track laying machine are difficult to obtain and re-laying must be carried out by manual method with single line occupation, or where single line tracks are involved, the Western Region of British Railways has developed a system whereby the recovered rails are loaded up in advance of the re-laying.

Rails are loaded up by the end-on method, but using a diesel winch instead

of pulling on by engine. The winch, which is mounted on a lowfit wagon, pulls the rails, in pairs, on to the adjacent bogie railwagon. The sleepers which have been moved to the cess may be loaded up after the new track has been laid by either crane or Brimpex loader. Although this method entails taking up the occupation from one to two hours in advance of the scarifiers and re-laying gang it has been found

more efficient for various reasons.

There is a saving in manpower and engine power costs as compared with loading up old materials at a later date; serviceable rails are more quickly made available for re-use; disturbance of the ballast shoulder, which often occurs when old rails are loaded from the cess after the track has been relaid, is avoided; and there is one less occupation of the line.



Diesel winch mounted on a lowfit wagon for loading rails



Rails being clamped to winch line for hauling on wagon

Diesel Haulage in Brazil



Four General Motors "G-12" diesel locomotives hauling 104 loaded ore wagons on a recent test run over the Vitoria-Minas line of the Cia Vale do Rio Doce S.A., Brazil

RAILWAY NEWS SECTION

PERSONAL

Mr. A. A. Pryce, Chief Mechanical Engineer of the South Australian Railways is on leave pending retirement.

Mr. M. J. Chughtai, General Manager, North Western Railway of Pakistan, who, as recorded in our October 31 issue, is retiring, was born at Lahore in 1904, and educated at Government College, Lahore.

Ministry of Communications, Karachi, and also officiated as Director General, Railways, from May to July, 1948. In 1949 Mr. Chughtai became Chief Engineer, North Western Railway. In 1952 he was appointed General Manager of the North Western Railway, Pakistan, leaving this position to become General Manager of the Eastern Bengal Railway in 1954. He returned to the North Western Railway, as General Manager, in 1957.

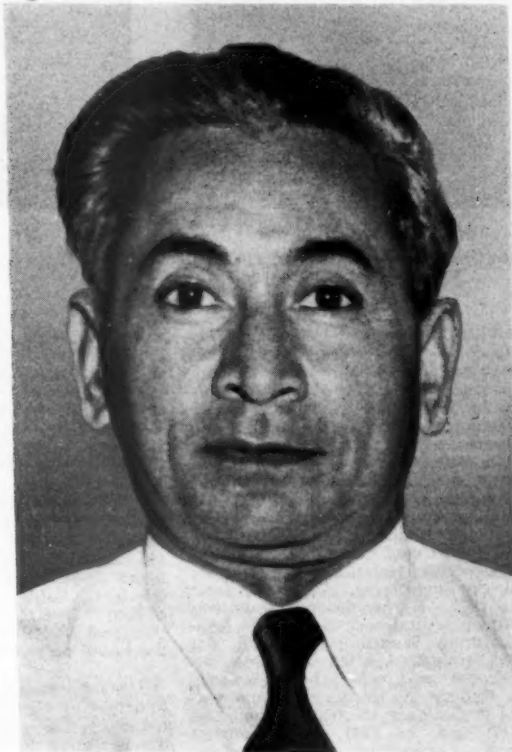
lege, Cambridge. Major-General W. D. A. Williams, Commissioner for Transport, East Africa High Commission, Nairobi, Kenya, has been appointed Principal of the college, and will be taking up his duties early next year.

Mr. S. B. Azid, General Manager, Chittagong Port Railway & Chairman of the Port Commissioners, who, as recorded in our October 31 issue, has been appoin-



Mr. M. J. Chughtai

General Manager, North Western Railway, Pakistan, 1952-54 and 1957-58



Mr. S. B. Azid

Appointed General Manager, North Western Railway, Pakistan

where he obtained honours in physics. He subsequently gained first-class honours in engineering and the Diploma in Engineering at London University. Mr. Chughtai served his apprenticeship on the London & North Eastern Railway and, on completion of his training in 1926, was appointed Assistant Executive Engineer, Indian Railway Service of Engineers, and posted to the East Indian Railway. In 1941 he became an Executive Engineer, having previously served as Divisional Personnel Officer. In 1945 he was appointed Secretary to the General Manager, East Indian Railway, and, the following year, was made an M.B.E. for services in connection with the planning and construction of ordnance depot sidings and the re-modelling of stations on the East Indian Railway. In June of that year he was appointed Joint Director, Establishment, Railway Board of India, and also officiated for some time as Director of Establishment. On partition he became Director of Establishment in the Railway Division,

Mr. Arthur H. Morey, Manager, Locomotive & Car Equipment Department, General Electric Company, Erie, U.S.A., has been awarded the George R. Henderson Medal of the Franklin Institute for his work in the development of the gas-turbine electric locomotive.

The administration of the new British Transport Commission Staff College for Higher Management has been vested in a governing body, of which Sir Brian Robertson, Chairman of the British Transport Commission, is Chairman. Other members are:—Sir G. Wilfrid Anson, former Deputy Chairman, Imperial Tobacco Co. Ltd.; Mr. Anthony Bull, Member of the London Transport Executive; Mr. C. P. Hopkins, General Manager, Southern Region, British Railways; Major-General Wansbrough-Jones, Secretary General of the Commission; Mr. A. B. B. Valentine, Member of the Commission; and Sir Henry Willink, Member of the Eastern Area Board and Master of Magdalene Col-

ted General Manager, North Western Railway, Pakistan, was born in 1906. Mr. Azid entered railway service as an Assistant Executive Engineer, Great Indian Peninsular Railway, in 1929. After serving at various stations, he was transferred to the Railway Board, as Deputy Director, Labour Welfare. He returned to his parent railway in 1946, and, in 1947, at the time of partition, he became Divisional Superintendent, Quetta, North Western Railway, Pakistan. Four years later he was transferred to the Railway Division, Karachi, as Director, Civil Engineering. In 1952 he moved to the Eastern Bengal Railway as Chief Engineer, Chittagong, and became General Manager of that system in 1954. In January 1955 he was appointed as Officer on Special Duty, to formulate the railways Five Year Plan. In March 1956 he returned to the Eastern Bengal Railway as Chief Engineer. Mr. Azid was appointed General Manager, Chittagong Port Railway, and Chairman, Port Commissioners in 1957.



Mr. de Graft-Johnson

Acting General Manager of the Ghana Railway & Harbours Administration



Mr. H. Green

Director & Chief Engineer, Metro-Cammell Carriage & Wagon Co. Ltd., who has retired



Mr. D. C. L. Robertson

Appointed General Manager, Metro-Cammell Carriage & Wagon Co. Ltd.

Mr. G. K. B. de Graft-Johnson, M.B.E., B.Sc. (Eng.), M.I.Mech.E., M.I.Loco.E., who was appointed Deputy General Manager, Ghana Railway & Harbours Administration in September, 1957, recently has been acting as General Manager during the absence of Mr. H. F. P. Plumridge. Mr. Plumridge has been in Europe on leave and to attend the International Railway Congress at Madrid. Mr. de Graft-Johnson was born at Accra in 1912. Educated at the Methodist and Mfantsipim Schools, Cape Coast, Ghana, Mr. de Graft-Johnson received technical training at the School of Engineering, Achimota, from 1932 to 1937. During this period, he was attached on several occasions to the Railway Location Workshops, Sekondi, for practical training. After obtaining his B.Sc. degree in London, he joined the Ghana Railway & Harbours Administration, as Probationer Mechanical Engineer, in 1937, and, in 1941, was appointed Assistant Locomotive Superintendent. From 1942 to 1944, Mr. de Graft-Johnson was seconded to the Nigerian Railway Corporation and was attached successively to the offices of the District Locomotive Superintendent, the Works Manager, and the Carriage & Wagon Superintendent. He later became a technical instructor in the Nigerian Railway Corporation Apprentices' Training School at Lagos. During 1949-50, he spent more than 12 months gaining further experience in the Motive Power, Carriage & Wagon and Operating Departments at Derby, London Midland Region, British Railways, and at other railway workshops. In 1952, he was appointed Motive Power Superintendent, Ghana Railway, and was awarded the M.B.E. for meritorious services to Ghana Railway & Harbours Administration. In 1953, he became Deputy Mechanical Engineer and in 1954, Chief Mechanical Engineer. In September, 1957, Mr. de Graft-Johnson was promoted to be Deputy General Manager.

Mr. W. Humble has resigned from the board of the Central Wagon Co. Ltd.

We regret to record the death on November 17, at the age of 73, of Mr. F. S. Whalley, former Chairman of the Vulcan Foundry Limited.

Mr. Harry Green, Director & Chief Engineer, Metropolitan-Cammell Carriage & Wagon Co. Ltd. who, as recorded in our October 10 issue, has retired and has relinquished his seat on the board, was born in 1893. Mr. Green was trained in the shops and drawing office, Swindon, Great Western Railway. He served in the Royal Engineers (Territorials) throughout the 1914-18 war and joined the Metropolitan Carriage Wagon & Finance Company, as a Junior Draughtsman, in 1919. He became successively Leading Draughtsman, Assistant to the Chief Engineer (Designs), Salford Works Manager, and Special Director & Chief Engineer (Designs). Mr. Green was appointed to the board on January 1, 1954.

Mr. John M. Taylor has been appointed Manager of Canadian Pacific Oil & Gas Limited. The company, a subsidiary of the Canadian Pacific Railway Company, was incorporated early this year to assist the parent company in the exploration and development of oil and gas in Western Canada.

Mr. W. Mowbray has been appointed a member of the Transport Users' Consultative Committee for Scotland until April 30, 1960, as one of the two members representing labour. He succeeds the late Mr. T. B. Meikle. Mr. Mowbray is a Member of the General Council, Scottish Trades Union Congress and a Past-President of the Council. He is also General Secretary of the Scottish Union of Bakers & Allied Workers.

Mr. J. G. Bruce has been appointed Principal Executive Assistant, Claims Office, London Transport Executive. Mr. Bruce, who is 50, was educated at Perth Academy. He joined London Passenger Transport Board in the Claims Office in 1935, and was appointed a Senior Executive Assistant in 1950. During the 1939-45 war Mr. Bruce served overseas with the London Scottish Regiment and subsequently held staff appointments in the Central Mediterranean theatre, attaining the rank of Lieutenant-Colonel. Mr. Bruce is an Associate of the Chartered Insurance Institute.

Mr. D. J. C. Robertson, C.B.E., T.D., B.Sc., A.M.I.Mech.E., A.M.I.E.E., who, as recorded in our October 10 issue, has been appointed General Manager, Metropolitan-Cammell Carriage & Wagon Co. Ltd., was educated in Aberdeen. Mr. Robertson received his engineering training as an apprentice with William McKinnon & Co. Ltd., and as a student apprentice with the British Thomson-Houston Co. Ltd., Rugby. He attended Aberdeen University and Robert Gordon's Technical College, Aberdeen, gaining a B.Sc. degree in both mechanical and electrical engineering. Between 1932 and 1939, he held various engineering appointments with the Royal Ordnance Factories at Woolwich; the Crown Agents for the Colonies, Engineering Inspection Department, and the Air Ministry Works Directorate. He was commissioned in the Territorial Army in 1937, and, during 1939-45, served with the R.A.O.C. and R.E.M.E. Workshops in France, Egypt, Algeria and Italy. From 1943, as a Colonel and Chief Electrical & Mechanical Engineer, he commanded various base workshops. He was twice mentioned in despatches and, in 1945, was awarded the C.B.E. Mr. Robertson joined the Metropolitan-Cammell Co. Ltd. in 1946, as Assistant to the Production General Manager. He was later appointed Works Manager, at Old Park Works and subsequently became Production General Manager, prior to his present appointment as General Manager. He was appointed to the board in 1955, is a Director of Metropolitan-Cammell-Weymann Limited and a member of the Management Board of the Engineering & Allied Employers' Association, Birmingham & District Area.

Mr. E. J. Grant, of the Regional Accountant's Office, Deepdene House, Dorking, Southern Region, British Railways, has been appointed Finance Assistant, Line Traffic Manager's Office (South-Eastern Division), Cannon Street.

We regret to record the death, at the age of 54, of Mr. W. A. Johnston, Assistant Chief Accountant, and formerly Chief Audit Inspector, New Zealand Government Railways.



Mr. J. L. R. Barnes

Appointed Chief Engineer, Carriages & Wagons, Metro-Cammell Carriage & Wagon Co. Ltd.



Mr. C. J. E. Large

Appointed Chief Engineer, Railcars, Metro-Cammell Carriage & Wagon Co. Ltd.



Mr. J. Edwards

Passenger Traffic Representative, Liverpool, C.N.R., 1947-58

Mr. J. L. R. Barnes, who as recorded in our October 10 issue, has been appointed Chief Engineer, Carriages & Wagons, and a Special Director, Metropolitan-Cammell Carriage & Wagon Co. Ltd., has been in the railway rolling-stock industry throughout his career, except for a brief period in the motor trade. In 1915, Mr. Barnes started as a junior in the Drawing Office of the Midland Railway-Carriage & Wagon Co. Ltd., now included in the Metropolitan-Cammell Group. He had served also with the Newlay Carriage Works, Leeds and the Rolling Stock Factory, Cammell Laird & Co. Ltd., Nottingham, prior to his engagement by the Metropolitan-Cammell Carriage & Wagon Co. Ltd. in 1935. Since then he has been successively: Leading Draughtsman, Assistant to Chief Engineer (Designs) and Chief Draughtsman.

Mr. E. G. Lampard, Westinghouse Brake Engineer, in the Mechanical Branch, New South Wales Railways, has retired.

Mr. E. N. Carrothers, Advertising & Publicity Officer, Ulster Transport Authority, has retired. He is succeeded by Mr. A. S. Minnis, Assistant Publicity Officer since 1951. Mr. Minnis joined the former Northern Ireland Road Transport Board in 1936, and has served in a number of departments in the Traffic Section.

The Mond Nickel Fellowships Committee announces the award of a Fellowship for 1958 to the following applicants:—

Mr. G. H. Longworth, Lancashire Steel Manufacturing Co. Ltd., to study the manufacture of plain carbon and alloy steels for rod and wire products, in the United Kingdom, the Continent, and the United States.

Mr. J. C. Morrison, Carron Company, to study melting, moulding and heat treatment of alloy cast irons, quality control of metal and sand plants in modern foundries, and new developments in related metallurgical processes.

Mr. T. Tait, Colvilles Limited, to study the technical and economic factors involved in the use of oxygen in steel industries in the United Kingdom, the Continent, and the U.S.A. and Canada.

Mr. C. J. E. Large, who, as recorded in our October 10 issue, has been appointed Chief Engineer, Railcars, Metropolitan-Cammell Carriage & Wagon Co. Ltd., obtained his early training in the rolling-stock industry with G. R. Turner Limited. Later he joined Cammell Laird & Co. Ltd. as a Draughtsman at their Rolling Stock Factory at Nottingham. In 1931, Mr. Large moved to the Metropolitan-Cammell Carriage & Wagon Co. Ltd. at Saltley, Birmingham, and, since then, has devoted practically the whole of his attention to the design and development of railcars.

Mr. Thomas D. Walker has been appointed an additional director of the Saunders Valve Co. Ltd.

Mr. H. Greville Smith, President of Canadian Industries Limited, has tendered his resignation from the board effective December 31. Mr. Peter C. Allen, an executive director of Imperial Chemical Industries Limited, the parent company, has been appointed to fill the vacancy and has been elected President of Canadian Industries Limited, both effective January 1. He will remain on the I.C.I. Board in a non-executive capacity.

Mr. G. F. W. Adler has been appointed Chief Mechanical Engineer and a Member of the Directorate of Engineering of Marconi's Wireless Telegraph Co. Ltd., with responsibility for all mechanical engineering design aspects, both of Marconi's and its associated company, Scanners Limited. He joins Marconi's from the English Electric Co. Ltd., where he was Chief Development Engineer.

The British Transport Commission announces the following appointments:—
Manpower Adviser's Department

Mr. H. Samuel, Passenger Assistant, Line Traffic Manager (Great Eastern), Training & Education Division, Cambridge, as Senior Instructor (Operating), British Railways Staff Training College, Derby.

Public Relations Adviser's Department
Mr. F. C. V. Odle, Publicity Division, Sub-editor of *Scope*, as Assistant Publications Officer.

Mr. J. Edwards, Passenger Traffic Representative, Canadian National Railway, who has retired, joined the Passenger Department, C.N.R., in Liverpool in 1922. Mr. Edwards moved to London as Cashier in 1934 and, five years later, returned to Liverpool as a clerk in the Freight & Express Department. He was transferred to the Passenger side in 1946, and has held his present position as Passenger Traffic Representative since May, 1947.

We regret to record the death, on November 11, of Mr. G. J. B. Bevan, formerly Deputy Agent, Burma State Railways.

We regret to record the death on November 14, at the age of 77, of Mr. F. R. Stagg, Deputy Chairman, Thos. W. Ward & Co. Ltd.

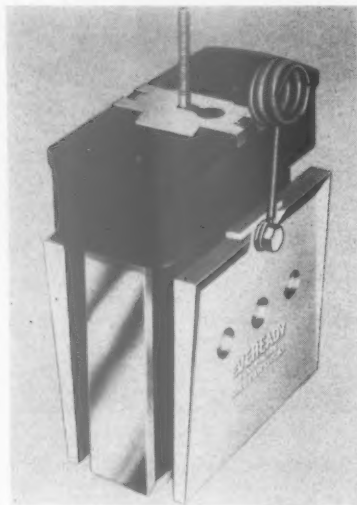
Mr. Cyril Smith, Chairman & Vice-President of the Railway Correspondence & Travel Society, has been appointed President in succession to the late H. J. Stretton Ward.

Mr. J. W. Plowman has been re-elected Chairman of the British Valve Manufacturers' Association for the year 1958-59. Mr. N. P. Newman has been re-elected Vice-Chairman.

Mr. J. B. Y. Hill, District Manager at Brixton for the Dunlop Rubber Co. Ltd., has been appointed Deputy Sales Manager of the company's National Sales Division. He is succeeded by Mr. B. S. C. Gurney-Randall, Deputy District Manager at the Albany Street depot.

Philips Electrical Limited announces the following appointments, to take effect from January 1, 1959: Mr. Hector Thorne, General Regional Manager, South-East Region, to be a Personal Assistant to the Managing Director, responsible for Market Development; Mr. W. F. Cassidy, Regional Manager, Midlands Region, to be General Regional Manager, South-East Region, and Mr. D. E. Beard, Branch Manager, Bristol, to be Regional Manager, Midlands Region.

NEW EQUIPMENT AND PROCESSES



Long Life Signal Cell

DESIGNED to fit standard 500-A.hr. cell jars for easy inexpensive conversion, the Eveready AC-750, 1.3 volt, 750-A.hr. air-depolarised cell for railway signalling equipment is claimed to make possible a reduction of one-third in the cost per Watt-hr.

With double the voltage and increased capacity of 975-Watt hr. compared with 325-Watt hr. for a 500-A. hr. copper oxide cell, there is a saving of up to two-thirds in the number of cells to install, maintain, and replace for a given Watt hr. capacity and less water to haul. Also there are no exhausted elements to process and return.

The AC-750 cell will operate at temperatures as low as -20°F. (-29°C.). At 25°F. (-4°C.) the maximum intermittent and continuous current drains are twice those of Class 3, Association of American Railroads, and three times those of Class 2 Cells, with good voltage characteristics. A plated metal band

supports both sides and bottom of the solid carbon electrode.

Further details may be obtained from the Carbon Products Department, Union Carbide International Company, 30 East 42nd Street, New York 17, New York, U.S.A.

Collapsible Containers for Liquids

LIGHT collapsible containers for a variety of liquids can be rolled into a small bundle when empty, so affording space in vehicles for return loads, as shown in the illustration below.

Portolite tanks are made from coated strong woven fabrics. They can be strapped on to the flat surface of an open sided wagon or placed within a vehicle providing it has sufficiently strong side walls to withstand the loads imposed by the contents of the tank. To reduce surge, air should not enter the tank during filling. The tank is most stable when completely full; a partly filled tank should be suitably lashed.

The construction and flexibility of the tanks enable them to be used for on-site storage purposes on unmade ground. When not in use, they can be stored without special packaging precautions. The tanks can be supplied with filling and emptying connections to meet customers' needs. Before filling, the tank should be rolled up to expel air. After valves and pipe lines have been connected it should be rolled out completely. Filling can then proceed until the tank reaches a given height. The reverse procedure should be followed for emptying. Steam and detergents may be used for cleaning.

The fabric of the Portolite tank will be governed by its contents, which may include: petrols, mineral oils, vegetable oils, water, latex, chemical salt solutions, alcohols, detergents, molasses, alkaline solutions, ketones, esters, dilute acids and fruit juices.

The manufacturers are Marston Excelsior Limited, a subsidiary of I.C.I. Limited. Further details may be obtained from Imperial Chemical Industries Limited, I.C. House, Millbank, London, S.W.1.

Conduit Bending Machine

THE Rival conduit bending machine is a portable outfit, suitable for fixing to brick piers or steel stanchions up to 12 in. deep in any railway workshop or on construction sites, by means of two adjustable clamps. It will bend electrical conduits from $\frac{1}{4}$ in. to $1\frac{1}{2}$ in. without the use of loose formers.

The machine is supplied with a quick acting clamp, and the dies allow for normal fixed radius bends or bends to any



radii as desired. It is compact and the makers claim that it is extremely easy to use. A clamping vice is provided additionally to allow the conduits to be held whilst cutting or screwing.

The price is £34 10s. and early delivery can be offered. The machine is manufactured in Switzerland. The sole distributor throughout the United Kingdom is Chamberlain Industries Limited, Staffa Works, Staffa Road, Leyton, London, E.10.



European Timetable & Through Carriage Conference

Accelerations resulting from further electrification in Western Germany

At the invitation extended by the State Railway of the German Democratic Republic at the conference at Naples last year, the European Timetable & Through Carriage Conference was held this year in Leipzig on October 15-21. Delegates attended from most of the European and from the Turkish State Railways, also from Transport Ministries, the International Union of Railways, the Wagons-Lits Company, the D.S.G. (German Sleeping & Dining Car Company), Mitropa, Orbis, and shipping and other interests. Plenary sessions were held in the Kongresshalle.

Representatives of the Southern and Eastern Regions of British Railways participated, headed by Mr. R. E. Sinfield, Shipping & Continental Manager, Southern Region, and Mr. S. A. Claydon, Continental Traffic & Shipping Manager, Eastern Region, respectively.

In the past, 10 days were allotted for the work of the conference, but, as a result of an agreement reached at Naples last year, to simplify the programme for the 1958 conference, the time was reduced to six days. The Managing Administration arranged with each railway administration to hold preparatory meetings with interested administrations before the Leipzig meeting. It was thus possible for questions affecting a small proportion of lines to be settled before the conference and for more time to be given to the finalisation of timings and train compositions for the principal express services, such as the "Simplon-Orient." Questions of a general nature were dealt with on the last day, after preliminary discussions at meetings with the chief delegates. A work programme setting out the dates, times, and meeting places for meetings covering services outlined on the list prepared by the Managing Administration (Swiss Federal Railways) was circulated, so that delegates knew well in advance exactly when matters concerning their railway administrations would be discussed. Commercial matters were also dealt with. Unlike previous conferences, when the main expresses were framed during the first few days, long-distance international express train services featured in the programme of work throughout the conference at Leipzig.

As usual, efforts were made to obtain accelerations, and as a result of electrification some railways will be able to effect improvements next summer, though much electrification work is still in progress.

The 1959 summer timetable will apply from May 31 to October 3, one week longer than last summer; there will be no interim period between termination of Continental summer services and the reversion to Greenwich Mean Time in Britain. Brief information on some decisions affecting connections with steamship services to and from Great Britain is given below.

"Simplon-Orient Express"

The eastbound train will continue to connect at Calais with the 11 a.m. service from Victoria. No major alterations are being made in the timings. A first and second class through coach will run daily between Calais and Rijeka.

"Orient Express"

Because of the lack of passengers between Vienna and the Austro-Hungarian frontier, the train will not run east of Vienna four days a week, though the

branch from Stuttgart to Prague and Warsaw will continue. It will run through to and from Budapest and Bucharest three days a week; on the other four, a diesel railcar will connect at Vienna West to and from Budapest. The journey times will be cut by about 45 min. as between Strasbourg and Stuttgart, with correspondingly earlier arrivals at, and departures from, places east thereof.

"Arlberg-Orient Express"

There will be accelerations of up to 30 min. (e.g., eastbound arrival at and westbound departure from Vienna). The practice of using the "Orient Express" to convey "Arlberg-Orient" passengers from Paris to Basle via Strasbourg during a certain period in the winter will be maintained for the winter 1959-60.

"Nord Express"

Instead of being combined with the "Tauern Express" from and to Ostend the "Nord Express" will operate as a separate train, though in the season certain coaches for Salzburg will be attached between Ostend and Cologne. Except for slight modifications the timetable will be similar to that in force last summer. Passengers by the Ostend branch will travel by the 3 p.m. boat train from Victoria via Dover/Ostend.

"Ostend-Vienna Express"

As a result of electrification of the German Federal Railway beyond Cologne it was possible to effect an acceleration to and from Vienna, with arrival at 11.15

a.m. (instead of 12.45 p.m.), and in the inwards direction, departure from Vienna at 6.50 instead of 4.30 p.m.

"Saphir" High-Speed Diesel Train

The eastbound timings from Ostend will not be altered. Westbound, the train will be accelerated to leave Frankfurt at 7.47 a.m. and, after a stop of only 3 min. at Cologne, to arrive Ostend at 2.20 p.m., only 25 min. before departure of the steamer for Dover.

"Holland-Scandinavia Express"

Efforts to obtain later departures from the Hook of Holland and earlier arrivals there on the return, to give passengers a longer night's rest on board the steamers from and to Harwich, have been generally successful. The "Holland-Scandinavia Express" will leave the Hook of Holland at 7.08 a.m. and return there at 10.46 p.m. There will be appreciable accelerations to Copenhagen and to and from Stockholm.

Accelerations in Rhine Valley

As a result of completion of further electrification of the German Federal Railway in the Rhine valley, both the "Rheingold" and the "Loreley" will be accelerated. The former will arrive, for instance, in Basle, southbound, 50 min. earlier, in Lucerne 96 min., in Milan 109 min., and in Chur (with a through coach, a new facility) no less than 2 hr. 50 min. earlier. The "Loreley" also will give much-improved connections.

The "Austria Express," connecting with the Harwich-Hook day service, also is being accelerated to and from South Germany and Austria. The "London-Hamburg Express," also connecting with the Hook day service, will not run, because of poor patronage.

Working of Former G.N.R.(I.)

Arrangements are being made by each department in Coras Iompair Eireann to take over the work in the corresponding departments of the former Great Northern Railway as regards the lines taken over in the Republic. Station staffs attached to the Traffic Department are not effective but the C.I.E. system of station accountability has already been introduced at the ex-G.N.R. stations.

Except for the Accounts Department all their staffs have vacated to the Dublin headquarters of the G.N.R. at Amiens Street. The accounts department is preparing the final accounts of the G.N.R. Board and consequently cannot leave the building.

Painting and decorating is in progress in most of the building which is to become a central traffic and operating headquarters of C.I.E. The District Superintendent's office at Westland Row Station has been closed and its staff and functions have already transferred to Amiens Street Station. The Locomotive Running Superintendent of the G.N.R. formerly with headquarters at Dundalk has also transferred with his staff to Amiens Street Station.

Redundancy so far created has been met by retiring male clerks who have reached the age of 60. They will receive compensation and this expenditure will be met from Government funds and will not in any way affect the finances of C.I.E.

Mr. J. F. McCormick, General Manager of the former G.N.R., retired on Septem-

ber 30, 1958; Mr. W. H. C. Stone, the Civil Engineer, retired on the same date. Both officers had passed the formal retiring age of 65 yr. Both Mr. A. Malcolm, and Mr. P. H. Patterson, Chief Accountant of C.I.E. and G.N.R. respectively are due to retire shortly and the Board of C.I.E. has advertised extensively for a Chief Accountant.

Train Working

All former G.N.R. services are operating much as before, except that locomotives of steam-hauled trains are being changed at Dundalk. The main Dublin-Belfast line is jointly operated by C.I.E. and U.T.A.; G.N.R. passenger services are included in the C.I.E. winter timetable.

All rolling stock which was divided equally between U.T.A. and C.I.E. has been temporarily branded with the initials of the owning company. Ex-G.N.R. locomotives, carriages, wagons, and diesel railcars still bear all G.N.R. markings but a large stencil appears in a prominent position on each vehicle indicating C.I.E. or U.T.A. ownership.

COAL BY PIPELINE IN U.S.A.—The Cleveland Electric Illuminating Company is reported to have agreed to receive 18 million tons of coal in the next 15 years via the Consolidated Coal Company 10½-in. pipeline. Group coal is to be moved through the pipeline during the next 12 months to fill 20,000 railway coal hopper wagons.

Great Eastern Line Train Alterations

A further stage of the dieselisation programme of the Great Eastern Line of the Eastern Region was reached on November 3, when two-car diesel train sets took over a number of the workings between Cambridge and March (both via Ely and via St. Ives, Somersham, and Chatteris); March and Peterborough; and March, Wisbech and Kings Lynn. All these services have been amplified and, on the whole, accelerated, and special attention has been paid to the connections at Peterborough North with the Great Northern Line services to Grantham, Doncaster, Leeds, York and beyond. The result is a substantial improvement in journey times between the Eastern Counties generally and the Midlands and North.

The new services from Cambridge to Peterborough include the 8.3 a.m., with connections to Sheffield (reached at 12.5 p.m.) and Newcastle (2 p.m.); the 11.56 a.m., with similar connections to Sheffield and Birmingham, both saving 27 min. on the previous journeys; the 1.5 p.m., connecting at Peterborough with the 1 p.m. "Heart of Midlothian" to Newcastle (6.11 p.m.) and Edinburgh (8.46 p.m.); and the 4 p.m., catching at Peterborough the connections to Sheffield, York and Newcastle made formerly by the 2.36 p.m. train, and thus saving 84 min. In the reverse direction new and altered services from Peterborough North at 7.15 and 8.24 a.m., 3.22, 6.36, and (Fridays only) 8.40 p.m. give accelerations of 34, 13, 46, 18, and 46 min. respectively in the through connections from the North, and the 10.26 a.m. and 12.32 p.m. provide new services.

Diesel units also have taken over almost all the workings between Kings Lynn and Hunstanton, with an acceleration of 7 min. in each direction, the only remaining through workings between Liverpool Street and Hunstanton being by the "Fenman" (6.55 a.m. from Hunstanton and 4.30 p.m.

from Liverpool Street). The 9.54 a.m. from Liverpool Street to March starts at 10.24 a.m., and runs to Cambridge only, arriving at 11.50 a.m., where it is in connection with the new 11.56 a.m. diesel train to Ely and Peterborough, the journey from Liverpool Street to March is accelerated by 19 min. Among other Great Eastern Line alterations, the 8.14 a.m. from Clacton-on-Sea to Liverpool Street calls additionally at Chelmsford without increase in journey time (so being required to cover the 51.7 miles from Colchester to Liverpool Street in 63 min. with stops at both Marks Tey and Chelmsford), and on Wednesdays only the 12.30 p.m. from Liverpool Street calls also at Chelmsford.

Railway Sidings at Port Harcourt, Nigeria

Installation of the sidings and wharf tracks for the Nigerian Ports Authority's new wharf extension at Port Harcourt is to commence this month.

Thomas Summerson & Sons Ltd. is responsible for the design, Messrs. Coode & Partners are the consulting engineers, and Taylor Woodrow (Nigeria) Limited is the main civil engineering contractor.

The site was surveyed in 1955, and a layout designed to the approval of Messrs. Coode & Partners and the Nigerian Ports Authority. The whole layout comprises new import and export tracks, marshalling sidings and wharfside tracks. The import, export, and marshalling sidings will be laid in 60-lb. F.B. rails and the wharfside tracks in 80-lb. F.B. rails. The 60-lb. F.B. rail layout comprises 60 turnouts angle 1 in 8, five angular crossways and three diamond crossings, 7,500 yd. of 3 ft. 6 in. gauge unguarded track laid on sleepers in ballast, 850 yd. of guarded track, and 960 yd. of unguarded track in paved areas and roadways. The tracks on the wharf

are laid flush in the concrete decking and comprise 26 fully guarded turnouts, four diamond crossings, 1,800 yd. of guarded track, and 850 yd. duplex crane track and 11 crane crossings, where duplex track crosses the 3-ft. 6-in. gauge guarded tracks.

Thomas Summerson & Sons Ltd. is the sub-contractor, and the work is expected to be completed in 1960. Mr. R. G. Howitt, of Summerson's, is the Chief Installation Engineer.

Staff and Labour Matters

National Bus Conference

On November 17, bus workers in London Transport decided to ban the National Bus Conference. This had been called for November 18 by the General Secretary of the Transport & General Workers' Union to shape a new and more positive national wages policy for the many busmen who are members of the T.G.W.U.

The London busmen have banned the conference because the T.G.W.U. has ignored demands from them to fight the 10 per cent cut in bus services due to take place on November 26. The busmen are bitterly opposed to slashing of services and feel that the T.G.W.U. should have taken more positive action to defend the position.

Workshop Redundancy

At a meeting of the Railway Shopmen's Sub-Committee of the Confederation of Shipbuilding & Engineering Unions in York on November 12, the question of the dismissal of employees in railway workshops was discussed.

The Chairman of the sub-committee gave a report on the meeting which representatives of the Employees' Side of the Railway Shopmen's National Council had with the Chairman of the British Transport Commission on November 10. According to the unions, more than 3,000

Main Line Diesel Working in Ireland



Dublin Westland Row to Wexford and Rosslare express near Killiney, Coras Iompair Éireann, hauled by Metrovick 1,200-b.h.p. Co-Co diesel-electric locomotive

men have been dismissed or given notice of dismissal from railway workshops in less than two years. The unions complained to the Chairman that in some areas there was lack of prior consultation and, although the men had been ready to co-operate in mechanisation plans, morale was deteriorating as a result of the dismissals.

The whole question of redundancy is under consideration between the Commission and the trade unions. A joint sub-committee of the Railway Shopmen's National Council commenced discussions on November 19 with the object of concluding an agreement on the matter.

Parliamentary Notes

Railways' Financial Handicaps

Mr. Ernest Davies (Enfield E.—Lab.) speaking in the industrial economic debate on November 4 (before the Minister of Transport announced more aid for accelerating modernisation) spoke "of the financial crisis that faces the B.T.C." "It is no exaggeration to say," he said, "that the public transport industry, in certain sections, is fighting for survival and that the Commission is fighting against bankruptcy. For this, Government policy is responsible. The consequence is that the maintenance of adequate public services is becoming increasingly difficult."

"Under the 1947 Act, the B.T.C., among its many other duties, had an obligation to provide adequate public transport services. The Conservative Government repealed the relevant section of the Act, and the Commission has no longer that responsibility. We are suffering today from that change in the law. The Commission has been compelled by the deterioration in its finances to cut its services considerably. . . . While maximum capital investment is necessary, there may be certain conditions in which it would be desirable to switch its direction from that originally shown in the White Paper. Why cannot the Commission now be left free as regards the amount of its capital investment? Today, the private sector of industry is allowed to spend at will. Why is it that this nationalised transport industry, which is in such dire need of modernisation, and whose expenditure helps our employment situation, cannot now have the restriction lifted from it, and to be allowed to go forward full steam ahead with its modernisation programme, so far as it can within the resources of material and manpower?"

Glasgow Locomotive Repair Works

Mr. Hugh Gaitskell, Leader of the Labour Opposition, giving impressions in the economic debate on November 4 of "recession" in Scotland, said:—"I went to a large factory in Glasgow which is owned by the British Railways and is concerned with the maintenance of locomotives. One would have supposed that the job of keeping locomotives in proper condition, of stripping and rebuilding them, and so on, was a fairly steady affair. About 2,000 people are employed at the works, which are facing redundancy. The reason for this is the fall in the amount of traffic carried on the railways, which means that the locomotives are coming in less frequently for repair and maintenance. That is the kind of consequence which, perhaps, we do not often think about, but the workers in that workshop are thinking about it."

Mr. Geoffrey Wilson (Truro—C.) suggested that the diminution of work in the maintenance of locomotives might be the result of introducing diesel traction.

Mr. Gaitskell: I am quite satisfied about that. I discussed it with the manager of the works. There is not the slightest doubt that the point may arise later.

Mr. Gaitskell, taking up another point, said that there had been a good deal of criticism of the Commission from the Government, and "we are extremely critical of the way in which the Government has handled its relations with the Commission over the last few years. It is inevitable that the Commission's financial position is greatly affected by the fall in freights. We are not taking it from the Government that this is in any way the responsibility of the Commission. The responsibility for this financial position rests fairly and squarely on the Government benches."

French Railways' Example?

Viscount Bridgeman, speaking in the House of Lords on November 5, said:—"One of the advantages of nationalisation in this country is that the industries are somewhat split, as is the case with the railway industry. That nationalised part is concerned solely with home trade and the private enterprise part is concerned solely with exports. As the converse of that, one sees the extremely interesting organisation which has been set up in France between the French nationalised railways and the French railway industry called Sofrerail, in which the nationalised industry is taking part with the private engineering firms in pushing the engineering products and the railway material in the export world. I mention that point because it is an example of what is presumably Government-sponsored effort which might well be worth while looking at here."

Questions in Parliament

Finances of the Railways

Mr. Ernest Davies asked the Minister of Transport & Civil Aviation on November 12 what steps he had in mind to amend the Transport (Railway Finances) Act by raising the limit of £250 million on borrowing to meet deficits incurred by the B.T.C. to enable deficits to be financed until 1962 as was the purpose of the Act.

Mr. Harold Watkinson: I shall be putting my proposals before the House in due course.

Mr. Davies: How soon will that be? Will the House have an opportunity to debate this? Is it the Minister's intention to increase the amount of the debt which the Commission will draw for deficit financing? Is it a fact that this fund will be exhausted next year, although it was voted for seven years? Do not the arguments for deficit financing, on the basis of loans from this House, stand today equally as well as they stood previously, especially as the Government are to blame for the Commission's difficulties today?

Mr. Watkinson: A sentence in my letter to the Commission said that its future position would be considered when the general limits of its borrowing were considered, and this was bound to arise shortly in any case.

Mr. D. Donnelly (Pembroke—Lab.) asked the Minister of Transport and Civil Aviation on November 12 whether he would make a further statement on the Government proposals to meet the prospective deficit of £85 million on British Railways.

Mr. Watkinson: The Government has decided to advance the necessary funds to meet this year's deficit under the Trans-

port (Railway Finances) Act of 1957.

Lt.-Colonel Bromley-Davenport (Knutsford—C.): This huge deficit, with the prospect of larger deficits yet to come, combined with worse service to the public, is yet another typical example of the failure of nationalisation.

Mr. Watkinson: Looking back, it is a pity so much time was spent on nationalisation and not enough on modernisation.

Mr. Davies: Will the Minister consider what modernisation was done on certain of the railways, notably on the L.N.E.R. before the war? In his letter to the Minister, did not the Chairman of the Commission state that the Commission's present position was due to the decline in traffic resulting from the decline in coal and steel production? Is not the Government's economic policy, therefore, to blame for the increase in the deficit?

Mr. Watkinson: I repeat that if modernisation had not been started 10 years too late, the Commission would not be in difficulty now.

Mr. H. Morrison (Lewisham S.—Lab.): If the old private companies had continued, not only would modernisation not have taken place, but the companies would have been bankrupt by now.

Adequacy of Railway Modernisation Funds

Mr. G. Nabarro (Kidderminster—C.) asked the Minister of Transport & Civil Aviation on November 12 to what extent the limitations placed by the Government upon the capital investment programme of the railways a year ago had now been relieved further to accelerate the modernisation programme.

Mr. Watkinson: The limitations were relieved when an extra £25 million was made available in May to accelerate modernisation in 1958 and 1959. Consideration is being given to the possibility of a further acceleration in 1959.

Mr. Nabarro: Can the Minister assure the House that he has now allocated to the B.T.C. all those capital sums for which Sir Brian Robertson has asked, that the total sum of money available for this year and next year, under the modernisation programme, will allow the maximum speed in that programme, that nothing is being withheld, and that the Commission is not in any way being inhibited by him.

Mr. Watkinson: That is certainly true of the current year. The Commission has had everything that it asked for. As for 1959, although at the moment the Commission has certainly had all that it has asked for, as I am anxious that modernisation should be pressed forward as fast as possible, we are looking at the matter again to make sure that the Commission has all the money that it can possibly use.

Mr. Ernest Davies: Does the Minister mean that the Commission has had all it asked for, that there was no cut in the capital of the modernisation programme last year, when a ceiling was put on the expenditure which the Commission was allowed to spend?

In stating there is a possibility of increasing the sum now, is the Minister aware that the Chancellor of the Exchequer said the other day that there would be increased expenditure on roads, railways, and other public industries?

Mr. Watkinson: The sequence of events covers all those facts. There was originally a cut, although it was largely a cut in the national future programme. Then there was an increase which gave the Commission all it could use this current year, as the Chairman has said. For 1959 we are re-examining the programme to see

if there is any more money that can usefully be used, if the finance is made available.

Capital Investment

Mr. Ernest Davies (Enfield E.—Lab.) asked the Chancellor of the Exchequer on November 13 what was the total amount of capital investment it is proposed to authorise for the roads programme, the nationalised electric power industry and the B.T.C., respectively, during the year 1959-60.

Mr. Douglas Jay (Battersea N.—Lab.) asked to what extent, in each case, restrictions imposed on the investment programmes of nationalised industries in 1957 had now been relaxed.

Mr. F. J. Erroll, Economic Secretary to the Treasury, replying to both questions together: It was intended in 1957 that the power and transport industries would invest more in 1959-60 than they did in 1957-58. During the summer these increases have been augmented, and further short-term additions are now being made. In total, as the Chancellor said last week, there will be a substantial increase over last year. But since the programmes are under continuous consideration I cannot at this stage give precise figures for them, either individually or in aggregate.

Mr. Davies: When does the Economic Secretary consider he will be able to give the precise figures for these different industries, particularly transport and roads? How is it that when a ceiling has been placed on expenditure, after a cut-back, the Chancellor had no difficulty in telling us the amount which the different industries can spend, but when there is an increase the Government withholds information from the House?

Mr. Erroll: I should like to be more helpful, but at this stage it is not possible for me to do so.

Railway Safety in Fog

Mr. Ernest Davies asked the Minister of Transport & Civil Aviation on November 12, what further action, following the reports of the inquiries into the railway disasters at Lewisham and Dagenham, was being taken to improve safety of railway travel during periods of fog.

Mr. Harold Watkinson: The reports of my Chief Inspecting Officer on the accidents at Lewisham and Dagenham revealed no significant shortcomings in the signalling or fog working methods in use on those lines, and showed that both accidents were due to drivers passing signals at danger. As was announced last week, the Commission are making a special investigation, with the help of a panel of scientific experts, into this problem, and the trades unions have promised their co-operation. Meanwhile the Commission are pressing on with the extension of automatic warning control to all the main lines and with the provision of many more colour light signals, as they fully accept the view of my Chief Inspecting Officer that both measures will do much to help drivers to observe signals in bad weather.

Automatic warning control will be installed on 300 route-miles, including the East Coast main line from Kings Cross to York, by the end of this year, in addition to the Western Region main lines.

Mr. Davies: Although installation of A.T.C. is the ultimate answer to the problem, these accidents have shown the great strain to which drivers and firemen are put during periods of dense fog, particularly during peak travel periods. Until A.T.C. is installed, would it not be

desirable to supplement the coloured light system by some other fog control equipment, including that of fog signals which used to be employed, whereby detonators were placed on the lines? Many locomotive engineers desire that that should be done.

Mr. Watkinson: I will certainly look into that.

Mr. David Jones (The Hartlepoons—Lab.): The Minister must recognise that all the drivers who use this route cannot be wrong. They complain that the siting of the signals at these points, together with conflicting lights, when there is swirling mists on the roads, causes tremendous confusion. Why cannot something be done temporarily to make conditions safer?

Mr. Watkinson: I have already said that I will look at any suggestions which are made, but I have no intention of re-opening the matters which were discussed at an open public inquiry. As to the strain on the men, the Medical Research Council is co-operating in the inquiry which the Commission is making.

Mr. Davies: Is the Minister aware that certain proposals have been made to the Commission by engine drivers and firemen and that, unfortunately, no action has been taken on those proposals?

Mr. Watkinson: I do not agree because, as I said, trade unionists are co-operating in this inquiry.

A.T.C.

Mr. Philip Goodhart (Beckenham—C.) asked the Minister of Transport & Civil Aviation on November 12 on how many miles of railway line A.T.C. equipment was installed during the last six months.

Mr. Watkinson: During the six months from May to October the wiring and cables necessary for A.T.C. have been installed on 191 route miles. The inductors are now being fitted, and 300 route miles will be fully equipped by the end of the year.

Mr. Goodhart: Can the Minister assure the House that the A.T.C., and allied safety programmes, will not be cut in any economy drive on British Railways?

Mr. Watkinson: Yes. It is rather ahead of schedule.

B.T.C. and New Inventions

Sir James Duncan (Angus S.—N.L.U.) asked the Minister of Transport and Civil Aviation on November 12, what general directions he had given to the B.T.C. regarding the testing of new inventions, with the object of increasing operational efficiency.

Mr. Watkinson: None. The Commission's active programme of study and development includes testing for this purpose.

Sir J. Duncan. An Austrian firm has offered, free of charge, a new invention for locomotives, which is claimed not only to increase the efficiency of the locomotive, but to make it able to consume quantities of coal which are in surplus at the present time? Will the B.T.C. have a look at this invention, because, up to now, the Commission has flatly refused to consider it?

Mr. Watkinson: That is not my information. I have looked into this myself, and I think that considerable examination of this matter has been made. One difficulty is that it is suitable only for steam locomotives, and no more steam locomotives are being built.

Staggered Hours

Mr. Richard Hornby (Tonbridge—C.) asked the Minister of Transport and Civil Aviation on November 11, what response

he had received to his recent efforts to persuade more firms in central London to stagger their hours of work.

Mr. Harold Watkinson, in a written answer: "The Crush Hour" Committee has recently reported that 200 Central London firms employing 25,000 staff have introduced staggered working hours and that the numbers travelling at the peak time of 5.30 p.m. have been reduced by 10,000. An up-to-date survey of the starting and finishing times of some 500,000 workers in Central London is now being prepared. The survey, which covers new office buildings recently brought into use, will assist the planning of the next attack on the most crowded periods of the rush hour.

Timetable Changes

Mr. Somerville Hastings (Barking—Lab.) asked the Minister of Transport & Civil Aviation on November 5 whether he would give a general direction to the B.T.C. that the change of trains from winter to summer services and vice versa should take place on the same date as the change to summer and winter time.

Mr. G. R. H. Nugent, Joint Parliamentary Secretary: No, Sir. This is a matter of management for the B.T.C. They inform me that the present dates for the changeover in the timetables correspond as nearly as possible with the beginning and end of the main seasonal holiday movements. To alter these dates to coincide with the change of time would mean running summer services when there was no summer traffic to fill them.

Mr. Hastings asked the Minister whether he would give a general direction to the B.T.C. that, on change from winter to summer services or vice versa on the railways, timetables might be printed so that the public might know in advance which of the trains they had previously been able to travel by were taken off.

Mr. Nugent: As this is a matter of management a direction would be out of place, and it is for the B.T.C. to deal with. They tell me that they aim to publish the summer and winter timetables at least six weeks before they come into force, but preparing them is a complex operation, and last-minute changes may cause delays.

I am not responsible, he said later, nor is the Minister, for compiling these timetables. I know that the Commission is trying to speed up the preparation of the timetables, but it is a complex and difficult business; the Commission does the best it can.

Giesl Front-End Units for Locomotives

Sir James Duncan (South Angus—N.L.U.) asked the Parliamentary Secretary to the Ministry of Works on November 4, as representing the Lord President of the Council, what research had been, or was being, done on the Giesl front-end for locomotives; and with what results.

He also asked what steps the Lord President of the Council has taken to obtain the loan for research purposes of two Giesl front-end units from the Austrian Railways.

Mr. Harnmar Nicholls, replying to both questions together in a written answer: I understand that the Giesl front-end for locomotives is a device which is a combination of chimney and blow pipe.

The testing of existing devices of this kind is not considered a suitable subject for research within the establishments controlled by the Department of Scientific & Industrial Research since the question of the suitability or adaptability of this device for use on British Railways is one for the British Transport Commission.

Contracts and Tenders

Diesel-electric locomotives for East African Railways & Harbours

The contract for the supply of eight main-line diesel-electric locomotives awarded by East African Railways & Harbours last August to the English Electric Co. Ltd., and recorded in our issue of September 5, has been increased to 10 locomotives at an additional cost of some £94,000. The total contract is now worth £919,000. The increase will allow full benefits to be obtained from the conversion of the Nakuru-Kisumu line to diesel operation.

Heenan & Froude Limited, Worcester, has received an order from J. Stone & Co. (Deptford) Ltd. for a Heenan-Dynamatic (eddy-current) dynamometer, to be used for testing the performance of hydro-mechanical transmission gears. The power transmissions in question are employed principally on diesel locomotives and are capable of transmitting powers from 400 to 1,800 h.p.

British Railways, Scottish Region, has placed the following contracts:—

James Scott & Co. (Electrical Engineers) Ltd.: electric power & lighting scheme for diesel maintenance facilities, Dundee West Motive Power Depot

R. M. Caldwell & Co. Ltd.: foundations and new approach roadway for 25-ton overhead electric crane, Bridge-ton Goods Station

Automatic Telephone & Electric Co. Ltd.: automatic branch telephone exchange, Perth District Offices, Perth Station

The Lanarkshire Welding Co. Ltd.: re-decking of underbridge No. 33 between Dalguise and Guay, Perth-Inverness line

James Laidlaw & Sons Ltd.: external walls, partitions and general fittings, Eglinton Street new centralised parcels depot, Glasgow, and reinforced concrete work, Hyndland new power-operated signalbox

James Crawford & Sons Ltd.: reinforced concrete work, Dumbarton new power-operated signalbox

G. Reid & Son Ltd.: erection of electric control centre, Cathcart

Decca Radar Limited: provision of radar for six vessels, Clyde fleet, Caledonian Steam Packet Co. Ltd.

British Railways, North Eastern Region, has placed the following contracts:—

H. Pels & Co. Ltd.: punch, shears, and cropper machine, Darlington Locomotive Works

Cawood Wharton & Co. Ltd.: superstructure to yardmaster's office block, Leeds Neville Hill Motive Power Depot.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From India:

3 diesel-hydraulic shunting type locomotives with spares.

The issuing authority is the Commissioners for the Port of Calcutta. Tenders should be submitted in triplicate in sealed covers superscribed "Diesel Locomotives." The original with a copy should be addressed to Messrs. Rendel, Palmer & Tritton, 125, Victoria Street, Westminster, London, S.W.1, and the second

copy should be addressed to the Chief Mechanical Engineer, 8, Garden Reach Road, Kidderpore, Calcutta-23, India. The closing date is December 19, 1958. The Board of Trade reference is ESB/28121/58.

From Pakistan:

30 bogie oil tank wagons in dismantled condition for the North Western Railway, broad gauge (5 ft. 6 in.) Alternatively

87 bogie oil tank wagons, as above.

The issuing authority is the Director-General (Railways), Railway Division, Ministry of Communications. The tender No. is PRS-58/WAG/8/TDR. Tenders addressed to the Director-General (Railways), Railway Division, Ministry of Communications, Government of Pakistan, Karachi, must be enclosed in sealed covers, superscribed "Tenders for B.G. Bogie Oil Tank Wagons." The closing date is December 29, 1958. The Board of Trade reference is ESB/27641/58.

From South Africa:

9 items of boiler tubes, superheater flue tubes, and superheater elements.

The issuing authority is the Stores Department, South African Railways.

Bids, in sealed envelopes, endorsed "Tender No. H.7501: Boiler Tubes, Superheater Flue Tubes and Superheater Elements," should be addressed to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. The closing date is December 5, 1958. Local representation is essential. The Board of Trade reference is ESB/27504/58.

From Greece:

12,000 oak sleepers for standard gauge line

750 oak bridge sleepers, to SEK drawing No. 2486A

87 complete sets of oak sleepers for turnouts to SEK drawing No. 2486A.

The issuing authority is the Ministry of Finance, State Procurements Service. The tender No. is 737. Bids should be sent to the State Procurements Committee, 56, Panepistimiou Street, 3rd Floor, Athens. The closing date is December 2, 1958. The Board of Trade reference is ESB/28280/58.

Further details regarding the above tenders, together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1).

Notes and News

British Transport Advertising Poster Site.

—The modernisation programme now being carried out by British Transport Advertising, the commercial advertising service of the British Transport Commission, includes new poster positions. The 64-sheet position at Southall, Middlesex, shown in the accompanying illustration, was completed last week. It flanks the iron (or skew) bridge on the Uxbridge Road underneath the line of British Railways, Western Region, and is framed with lattice work, with a small garden at the foot. More than 20,000 road vehicles pass the spot every day. The redevelopment

was undertaken for British Transport Advertising by Sturgeon Signs, of Plaistow.

B.T.C. Meeting in Sheffield.—The British Transport Commission, pursuing the policy of holding some of its meetings outside London, so as to keep closely in touch with local industrial, business and trading interests, arranged to meet in Sheffield on November 20, during a tour of the Leeds and Sheffield area on November 19-21. Arrangements for the tour included visits to several transport installations and meetings with personalities prominent in local civic affairs, trade, and industry. On November 19, the Commission inspected the Central and City stations at Leeds,



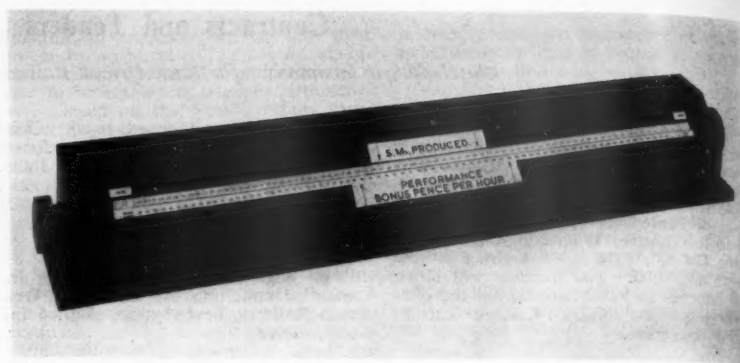
British Transport Advertising 64-sheet poster position on Uxbridge Road, near Southall

afterwards going to to Sheffield, where the formal business meeting was arranged for the Thursday morning under the Chairmanship of Sir Brian Robertson, to be followed by a visit to the Nunnery mechanical coal handling plant of Burnett & Hallamshire Fuel Limited, and, later, an inspection tour to Barnsley. Today (Friday) the Commission is to inspect railway modernisation work at Grimesthorpe, Tinsley, and Staveley, and visit British Transport Waterways and B.R.S. installations in Sheffield, which will conclude the visit.

Bonus Calculation in the Eastern Region.

—A calculator has been designed by the Eastern Region of British Railways for use in calculating performance and bonus credits at depots where incentive schemes based on work study are in operation. The present method of calculation is to convert production hours worked to minutes; calculate the operator's performance; select the bonus chart appropriate to the man's rate; and read off the bonus at the calculated performance. This involves an appreciable amount of clerical labour. The adoption of the calculator enables the clerk to have one hand on the drum control and the other holding the pencil, and in this position he can go through the whole of the bonus tickets in the depot. The body of the calculator has a scale of performance indices from 50 to 125. The revolving drum has two sets of scales, one with clock hours and S.M.'s produced, the other with wages rates and bonus pence per hr. The procedure is to set the calculator at the hours worked and identify the nearest figure to the standard minutes produced, reading off the performance on the scale on the body of the instrument, rotate the drum to the man's rate and read off the bonus earned.

Demonstration Run of Co-Bo Diesel Electric Locomotive.—No. D5703, one of the type "2" 1,200-h.p. mixed-traffic diesel-electric locomotives described in last week's issue, made a demonstration run from St. Pancras to St. Albans, 18½ miles, in the London Midland Region, and back on November 13. With a load of five vehicles, weighing 200 tons, the train reached St. Albans in 21 min. The return journey was made in 20½ min. These diesel locomotives are being used for mixed traffic in the Midland Division



British Railways, Eastern Region, bonus calculator, showing fixed performance scale and rotating drum

of the L.M. Region. Five of a total of 20 are reported to have been delivered and the rest are expected at the rate of one a month.

Bagworth & Ellistown Station to be Reconstructed.—The station buildings at Bagworth & Ellistown Station, on the Leicester-London Road to Burton-on-Trent branch of British Railways, London Midland Region, are to be demolished and a new structure erected. Work will begin before the end of the month. The foundations and general contracting work will be carried out by the District Engineer. The superstructure will be of prefabricated timber and will be supplied by Vic Hallam Limited, of Langley Mill, Nottingham.

Aberdare Cables Limited Twenty-First Anniversary.—Aberdare Cables Limited celebrated its 21st anniversary on November 13, with a works open day, and on November 14, some 500 employees of the company and their wives were entertained to dinner at the City Hall, Cardiff, to celebrate the event and inaugurate the Long Service Association. The founder Chairman of the company, Sir George Usher, and the present Chairman, Sir John Pascoe, both have served 21 years and became founder members of the Association with 26 others, most of whom come from Aberdare. At a luncheon on November 13, Sir John Pascoe stated that the establish-

ment of Aberdare Cables Limited in a town where some 45 per cent of the men were unemployed, had been a free-enterprise undertaking with no Government assistance. It had given security of employment, a matter very much the concern of those responsible for the conduct of industry. At the present time the main products of the factory are copper wire, aluminium wire, paper-insulated power cables for use underground, and thermoplastic insulated and sheathed cables.

Three Freight Trains in Collision in the Western Region.—Three trains were involved in a collision at Highworth Junction, near Swindon, British Railways, Western Region on November 12. A Bristol-Reading freight train was derailed, and another freight train, the Fishguard-Paddington train, ran into the derailed wagons completely blocking one line. The Paddington-Carmarthen newspaper train then ran into the wagons of the Fishguard train blocking the other line. No one was hurt.

Three London Midland Region Trains in Collision.—Two freight trains and a parcels train were involved in collisions near Crewe, British Railways, London Midland Region, on November 11. A parcels train from Euston ran into the rear of a freight train from Willesden to Crewe, and a passing freight train from Crewe to Willesden struck a derailed wagon. Two locomotives and four wagons were derailed by the collisions. Main line trains were diverted via Stoke and Shrewsbury.

Overseas Visitors to Britain in September.

—In September, 120,000 overseas visitors came to Britain, an increase of 8 per cent over the total of 111,000 in the same month of 1957. Total traffic from the European countries remained at roughly the same level as in 1957, about 52,000, but a number of countries, notably Germany and Italy, recorded substantial increases. The number of visitors from the United States increased by 25 per cent, from 28,500 to 35,700. In the first nine months of this year, Britain attracted 1,056,000 overseas visitors, 5 per cent more than the total of 1,005,000 for the corresponding period last year.

New Civil Air Transport Authority Suggested.—Mr. Harold Watkinson, Minister of Transport & Civil Aviation, stated at the British Independent Air Transport Association in London recently that while the Government could not renounce responsibility for ultimate policy decisions,

Diesel Railcars on the Great Northern Line, Eastern Region



Two Craven-built twin-unit diesel railcars working as four-car set on the Kings Cross to Hertford North line of British Railways, Eastern Region (see editorial reference in our issue of October 31)

he wondered whether it was not possible to devise some kind of new statutory authority for civil air transport which could hold the balance between the different interests of the industry. He thought there were "attractions" in the idea of a new type of Air Transport Advisory Council. Such a revised body could have new powers, revised and wider terms of reference, and wider discretion. There was much to be said for the independent air operators' view that they should be allowed to run scheduled services in their own right and not merely as associates of the Corporations.

Western Region Publicity.—The Public Relations & Publicity Department, British Railways, Western Region, has produced two new season's posters, showing Compton and Warwick Castles. The original of the former was painted by Jack Merriott, and 2,250 copies will be displayed throughout British Railways during 1958-59. Copies of the Warwick Castle poster, painted by L. C. Bagley, will also be displayed throughout the U.S.A.

The Institution of Civil Engineers: Christmas Lectures.—The Institution of Civil Engineers will feature its customary Christmas lectures for boys and girls at its headquarters, Great George Street, Westminster, London, S.W.1. This year there will be a lecture on "Peculiar railways," by Mr. L. T. C. Holt, on December 29, at 3 p.m., and on December 30, at the same time, one on "86 days round the world," by Mr. A. McDonald. Both lectures will be illustrated by lantern slides. "Peculiar railways" will deal with little-known railways and engines, and among the slides will be pictures of the South Devon Atmospheric Railway, broad gauge locomotive of the old Great Western Railway, and mountain lines.

Transposition of Lines Between Manchester London Road and Slade Lane Junction.—Major engineering works were carried out at the approaches to Manchester London Road Station, British Rail-



New posters produced by the Public Relations & Publicity Department, British Railways, Western Region

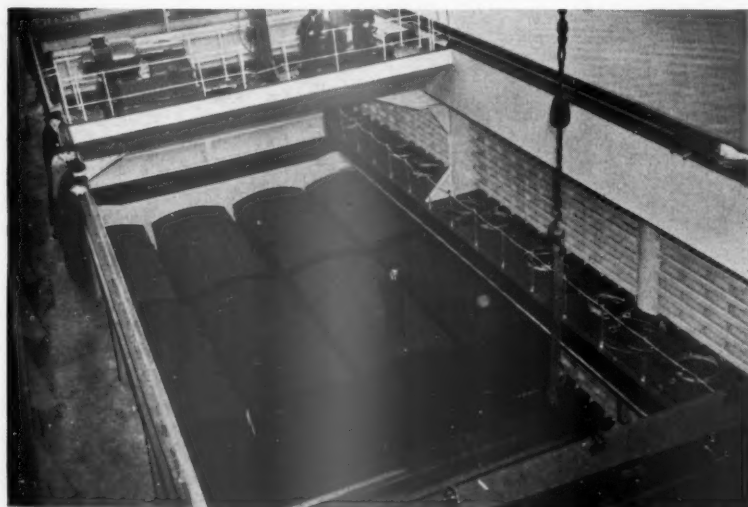
ways, London Midland Region, in connection with the electrification of the Crewe-Manchester line, last weekend. During the 52-hr. period of complete possession the transposition of running lines between London Road Station and Slade Lane Junction, and the complete resignalling of Slade Lane Junction, was carried out. Also Levenshulme North signalbox was abolished. The changeover of running lines will result in a much freer flow of traffic into and out of the terminal by reducing the large number of crossings at the entrance to the Station and at Longsight which were unavoidable with the old layout. The work was carried

out under the direction of Mr. J. Taylor Thompson, Chief Civil Engineer, and Mr. E. G. Brentnall, Signal Engineer, British Railways, London Midland Region.

Toledo Woodhead Springs Limited Dividend.—The total dividend of Toledo Woodhead Springs Limited is being maintained at 17½ per cent with a final payment of 10 per cent. As a further measure of confidence the board has declared a special interim of 2½ per cent for 1958-59. Group net profits were £46,374 (£39,924).

Saunders Valve Co. Ltd. Unchanged Dividend.—An unchanged interim dividend of 4½ per cent has been recommended by the board of Saunders Valve Co. Ltd. During the current financial year orders and output have been at a rate approximately the same as the average during the previous year, but profit margins continue to be subjected to current pressures.

British Railways International Container Traffic



Loading "BD" type containers in the "Isle of Ely" at Parkeston Quay, Eastern Region, showing neat stowage (see our October 31 issue)

Forthcoming Meetings

November 21 (Fri.).—R.O.D. Officers' Reunion Dinner at the Transportation Club, 44, Wilton Crescent, London, S.W.1, at 6.30 for 7 p.m.

November 24 (Mon.).—Institution of Railway Signal Engineers, Bristol Section, at Temple Meads Station, Bristol, at 6 p.m. Paper on "Earth leakage detectors," by Mr. H. J. N. Riddle, S. & G. E. Railway Signal Co. Ltd.

November 25 (Tue.).—British Railways, Western Region, London Lecture & Debating Society. Debate with the Oxford University Railway Society at Oxford: "That this House considers that the policy of a nationalised transport industry towards the community should not be 'starvation and closure' but service."

November 25 (Tue.).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. Paper on "A study of traffic

- flow, its seasonal variation, and relation to traffic capacity standards, with special reference to parts of Dorset," by Mr. J. I. Whitehead.
- November 25 (Tue.).—Railway Correspondence & Travel Society, East Midlands Branch, at the N.C.S. Guild Room, Toll Street, Nottingham, at 7.30 p.m. Paper on "Locomotive and railway working in North Lincs." by Mr. J. J. Foreman.
- November 26 (Wed.).—Railway Students' Association, at the London School of Economics, Houghton Street, Aldwych, W.C.2, at 6.15 p.m. Paper on "Research and development in the handling of freight traffic," by Mr. E. Flaxman, Commercial Officer, British Railways (Western Region).
- November 26 (Wed.).—Railway Service Christian Union, at British Transport Commission Headquarters, 222, Marylebone Road, London, N.W.1, at 6.15 p.m. Birthday meeting. Mr. J. Taylor Thompson, President, will be in the Chair.
- November 26 (Wed.).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas's Street, London, S.E.1, at 5.45 to 6 p.m. A selection of films from the British Transport's library.
- November 27 (Thu.).—British Railways, Western Region, London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Paper on "Coal transport in 1958," by Mr. W. L. Kelly, Assistant Marketing Director (Transport), National Coal Board.
- November 27 (Thu.).—Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m. Paper on "Railways in the British Isles," by Mr. J. J. Davis.
- November 28 (Fri.).—The Railway Club, at the Danish Club, 62, Knightsbridge, London, S.W.1, at 7 for 7.30 p.m. Annual dinner.
- November 29 (Sat.).—Railway Correspondence & Travel Society, Sussex & Kent Branch, at the Railway Hotel, Brighton, at 7.30 p.m. Paper on "The Claughtons of the L.N.W.R.," by Mr. R. M. Tomkins.
- November 29 (Sat.).—Stephenson Locomotive Society, Scottish Area, at 302, Buchanan Street, Glasgow, at 2.30 p.m. Paper on "The Irish scene, Coras Iompair Eireann," by Mr. Donald Luscombe.
- December 1 (Mon.).—Railway Correspondent Travel Society, Northampton Branch, at the Liberal Club, Castilian Street, Northampton, at 7.30 p.m. Paper on "Narrow gauge industrial locomotives," by Mr. H. Jones.
- December 2 (Tue.).—Permanent Way, Institution, Leeds & Bradford Section, in the British Railways Social & Recreation Club, Leeds City Station, at 7 p.m. Paper on "This costs money," by Mr. J. Dobson.
- December 2 (Tue.).—South Wales & Monmouthshire Railways & Docks Lecture & Debating Society, Cardiff Section, at the Angel Hotel, Westgate Street, Cardiff, at 6.30 p.m. Paper on "Railway modernisation," illustrated, by Mr. J. R. Hammond, Assistant General Manager (Modernisation), Western Region, Paddington.
- December 2 (Tue.).—Institute of Traffic Administration, London Centre, at Caxton Hall, Westminster, S.W.1, at 7.15 p.m. Paper on "Modernisation of British Railways," by Mr. J. K. Blue.
- December 2 (Tue.).—Institute of Traffic Administration, Southampton Centre, at the Chamber of Commerce, Southampton, at 7.30 p.m. Paper on "The trade union in transport," by Mr. E. Allen.
- December 4 (Thu.).—Railways Correspondence & Travel Society, West Midlands Branch (in association with the Birmingham Locomotive Club), at the Engineering Centre, Birmingham, at 7.15 p.m. Driver G. Joy of the G.W.R. will describe some of his experiences.
- December 5 (Fri.).—Railway Correspondence & Travel Society, and Stephenson Locomotive Society, Scottish Branches, at 25, Charlotte Square, Edinburgh, at 7.30 p.m. Paper on "The part to be played by signalling in the modernisation plan," by Mr. O. S. Nock.
- December 5 (Fri.).—The Railway Club, at 320, High Holborn, London, W.C.1, at 7 p.m. Paper on "London to Lisbon by rail," by Mr. R. Burrows.
- December 6 (Sat.).—Stephenson Locomotive Society, North Western Area, at the Y.M.C.A., Fargate, Sheffield, at 6.30 p.m. Paper on "The North Eastern Region of British Railways," by Mr. R. A. Savill.
- December 6 (Sat.).—Stephenson Locomotive Society, North Eastern Area, at the Griffin Hotel, Bear Lane, Leeds, 1, at 6.30 p.m. "The North Eastern Railway 4-4-0's," by Mr. K. Hoole.
- December 6 (Sat.).—Stephenson Locomotive Society, North Western Area, at the Conference Room, Liverpool Central Station, at 7.30 p.m. Colour slide show "More rail travel in colour," by Mr. J. B. McCaun.

Railway Stock Market

Foreign railway stocks have been relatively quiet and in most cases kept at the same levels as a week ago. Canadian Pacific reflected the easier trend on Wall Street and were lower at \$52½, compared with \$55½ a week ago. The 4 per cent preference stock, which yields 7½ per cent, eased from 56½ to 56 and the 4 per cent debentures receded to 63½xd. The preference stock is, of course, non-cumulative as to dividend, but even so, bearing in mind the extent of the cover for dividend requirements, it would seem to be moderately priced. Canadian Pacific ordinary shares, which yield 5½ per cent on the basis of last year's 6 per cent dividend, also appear undervalued in relation to many other dollar securities.

Costa Rica ordinary stock has remained at 15½ and the 6½ per cent first debentures again changed hands around 75½. Chilean Northern 5½ per cent first debentures rallied from 48½ to 49½. Brazil Railway bonds strengthened to 6½. Paraguay Central prior debentures were 11 and Guayaquil & Quito Assented Bonds 78½, while in other directions, the quotation for International of Central America common shares was marked up from \$19 to \$27, and the preferred stock from \$110 to \$112. San Paulo Railway 3s. units kept at 2s. 0½d., while in other directions Mexican Central "A" bearer debentures were 73½. White Pass shares were dealt in around \$14½.

Nyasaland Railways shares showed business up to 13s. and the 3½ per cent debentures were 62½xd.

Antofagasta ordinary moved fraction-

ally lower at 16½, but the preference stock was maintained at 36 and the 5 per cent Bolivia debentures again 95½.

Emu Bay 5 per cent irredeemable debentures marked 22½ and the 4½ per cent debentures 36½. Midland Railway of Western Australia ordinary stock was 5½, and business at 12 was recorded in the income debentures.

West of India Portuguese capital stock kept at 77 and the 5 per cent debentures at 68.

There was rather more business reported in shares of locomotive builders and engineers, with G. D. Peters changing hands at 26s. 6d. while Westinghouse Brake at 42s. 6d. held all but a small part of their recent rise. Elsewhere, Birmingham Wagon at 21s. 1½d. were also quite well maintained after their rise of a week ago, and North British Locomotive were marked up from 12s. 9d. to 13s. 6d. Beyer Peacock 5s. shares have remained at 8s. 6d. Charles Roberts 5s. shares at 10s. 3d. were within 1½d. of the price a week ago. Wagon Repairs 5s. shares at 10s. 4½d. held steady, but Gloucester Wagon 10s. shares eased from 17s. 1½d. to 16s. 9d. Renold Chain strengthened to 38s. 9d. on the progressive policy indicated by the proposed bid for Perry & Co. (Holdings) on the basis of six Renold shares for every £5 of Perry ordinary stock. B.S.A. shares at 35s. have not held best prices, despite the higher dividend, the directors' cautious statement regarding the outlook having affected sentiment. T. W. Ward at 80s. have also receded because of the chairman's reference to less favourable conditions in some sections of the group's activities. Dowty Group 10s. shares eased from 42s. to 41s. 6d. and Pressed Steel 5s. shares were less firm at 21s. 3d.xd. British Timken kept at 60s. 3d. and Ransome & Marles 5s. shares rose further from 15s. 9d. to 16s. Associated Electrical were 57s., English Electric 57s. 3d. and General Electric 36s. 9d.

OFFICIAL NOTICES

DRAUGHTSMAN required with knowledge of Railway Switch and Crossing Work.—Apply in writing, giving details of experience, qualifications, age, references and salary required, addressed "Confidential," to the Manager, Isca Foundry Co. Ltd., Newport, Monmouthshire.

MANAGER for Materials Department. Must have had experience in handling Railway and Civil Engineering Materials, and be conversant with the valuation and disposal of secondhand Railway Materials.—Apply: Eagre Construction Co. Ltd., East Common Lane, Scunthorpe (Phone: Scunthorpe 4513).

REQUIRED for the Southern Railway of Peru.—**ASSISTANT ACCOUNTANT.** Must be fairly young and have had several years of accountancy experience, preferably on a railway, and with knowledge of the Spanish language. Salary: £1,300/£1,500 per annum, according to qualifications.—Apply in writing to: Peruvian Transport Purchasing Company Limited, Rex House, 38, King William Street, London, E.C.4.

MALAYAN RAILWAY ADMINISTRATION. **FEDERATION OF MALAYA. FOR SALE:** 25 Metre Gauge Steam Locomotives Classes 541, 551, 552, 553 (4-6-2 wheel arrangement) 95 (2-6-0) and 3 Class 26 Sentinel Steam Articulated Rail Cars, from the Malayan Railway. These are available owing to dieselisation and can be supplied overhauled and painted to purchaser's specification, with adequate spares. Boilers of Classes 541, 551, 552 and 553 have been reboxed since 1952.—Further particulars from The General Manager, Malayan Railway, Kuala Lumpur, Federation of Malaya, or Crown Agents, 4, Millbank, London, S.W.1 (Ref. O/Prod. 1855).

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